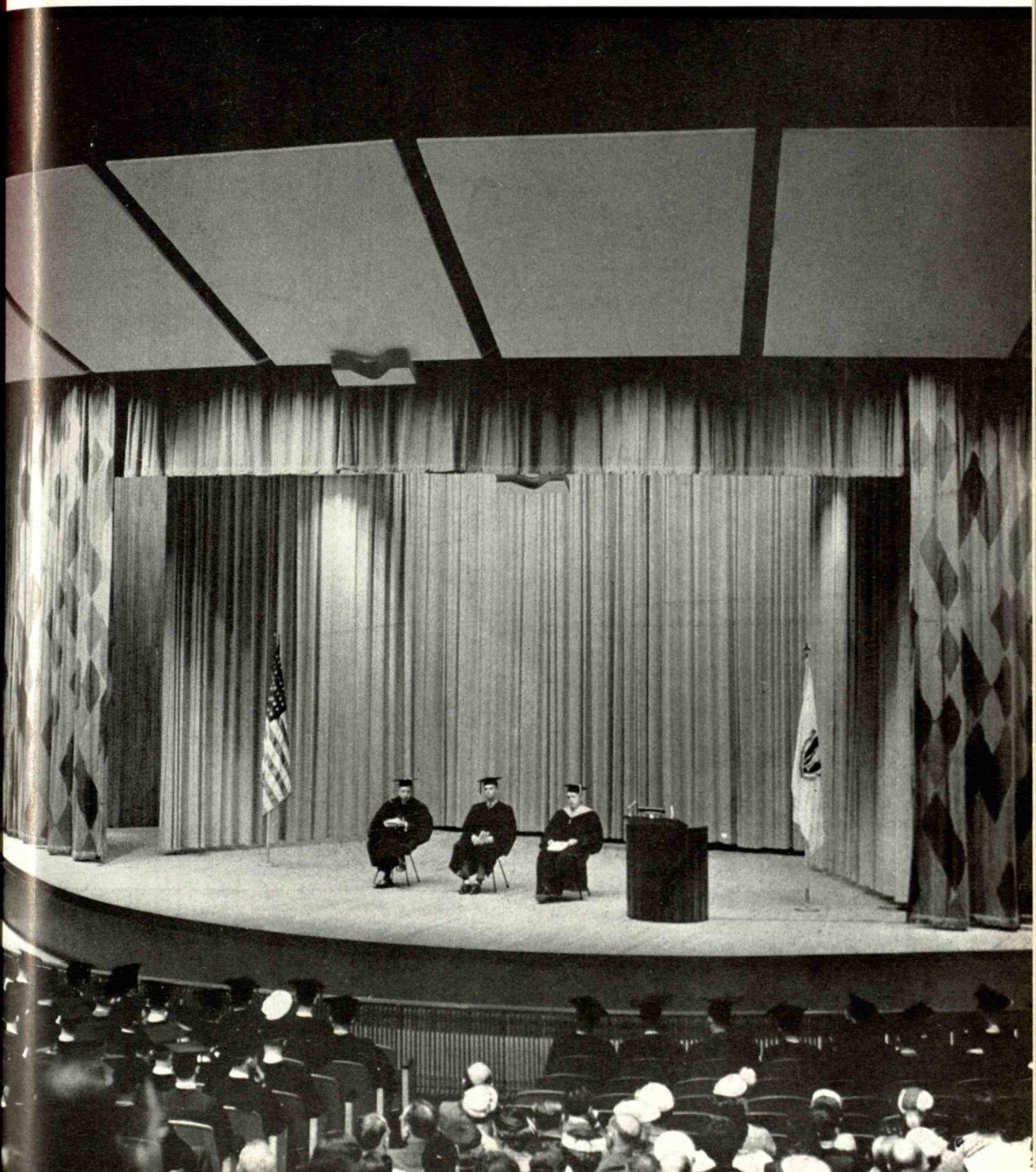


TECHNOLOGY

REVIEW

July 1957



technology review

Published by MIT

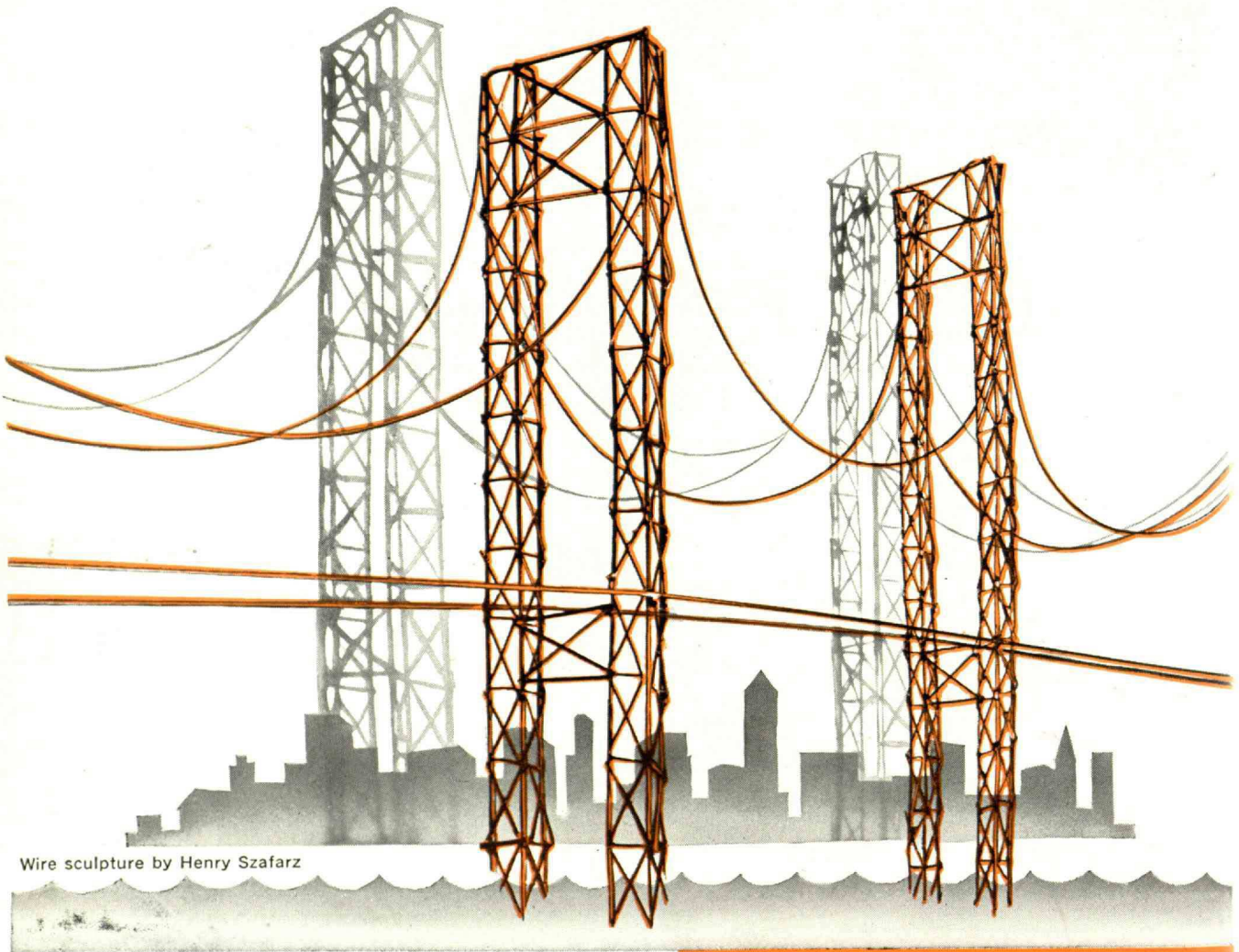
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Simplex-ANHYDREX cables, for instance, which are used everywhere for power distribution, control, floodlighting and numerous other functions. These expertly-engineered cables are equally suitable for overhead or in-the-ground use. They resist sunlight, ground acids, alkalies, oil, heat and flame, and their ANHYDREX insulation makes them super-resistant to water.

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79 Sidney Street, Cambridge 39, Mass.



Wire sculpture by Henry Szafarz

Simplex

ANHYDREX



Now! **Constant Damping Without Warm-up**



Linear Accelerometer
Type LA-500
Shown actual size.

LINEAR ACCELEROMETERS for Aircraft and Missiles

DESCRIPTIVE DATA

- **RANGE:** Up to ± 60 G full scale.
- **DAMPING RATIO:** 0.6 ± 0.2
(from -65°F. to $+175^{\circ}\text{F.}$).
- **LINEARITY:** 1% of full scale.
- **PICKOFF:** Can be provided with
2 potentiometer pickoffs
(center taps optional).
- **SIZE:** $1\frac{1}{16}$ " dia., $3\frac{1}{4}$ " long.
- **WEIGHT:** 1 lb.

HONEYWELL LINEAR ACCELEROMETERS of the Type LA-500 Series are true linear, non-pendulous type instruments, inherently insensitive to cross-coupling accelerations. These instruments are available in a variation of ranges from ± 1 G to ± 60 G and can be provided with two potentiometer pickoffs. Essentially constant damping is maintained automatically throughout the entire operating range of -65°F. to $+175^{\circ}\text{F.}$ No warm-up time is required.

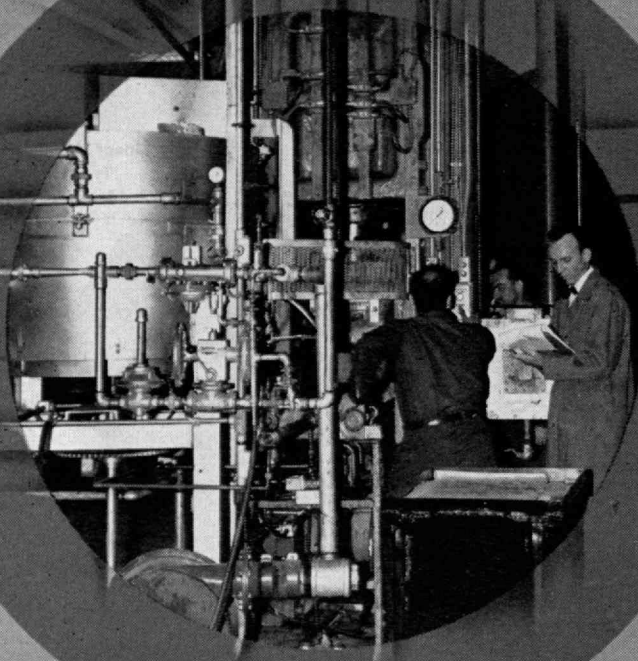
The combination of constant damping, high performance, small size and ruggedness makes HONEYWELL LINEAR ACCELEROMETERS of the Type 500 Series ideally suited for aircraft and missile applications where the most severe environmental conditions are encountered. Write for Bulletin LA-500, Minneapolis-Honeywell, Boston Division, Dept. 1, 1400 Soldiers Field Road, Boston 35, Mass.

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FUTURES

in NUCLEAR ENERGY...



Your future in nuclear fuel production can be realized by associating with the Nuclear Products Division of Metals & Controls Corporation — a company that maintains a continuing interest in the personal success of its employees and the undiminishing quality of its products.

We are growing to meet the expanding requirements for fuel elements and as an important part of this growth, we need bright, aggressive men. Experience in atomic energy is not required, but we do need scientifically trained people — people experienced in the mechanical, metallurgical or chemical fields.

Here are a few things you should know about us:

- Production of Nuclear Fuel Elements is our specialty.
- Nuclear Products Division has been able to translate scientific data and experimental results into production know-how and, utilizing this capability of scientific production, is establishing a leading position in the nuclear fuel element field.
- You will work in a stimulating atmosphere with the latest and most complete facilities yet developed.
- Nuclear Products Division is part of Metals & Controls Corporation, a company of 2500 people, small enough to insure individual recognition and growth — large enough to offer stability.
- We are located in Attleboro, Massachusetts — within easy commuting distance of Boston and Providence, offering exceptional cultural, educational and recreational facilities.

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Robert Glidden	1926	Sidney Siegel	1943
Roger Hood	1945	Frederick Stearns	1946
Donald Hurter	1945	Graham Sterling	1949
Edward Jastram, Jr.	1935	George Williams	1939
Charles Patterson	1945	Carroll Wilson	1932
Robert Seavey	1942	John Wilson	1941

METALS & CONTROLS

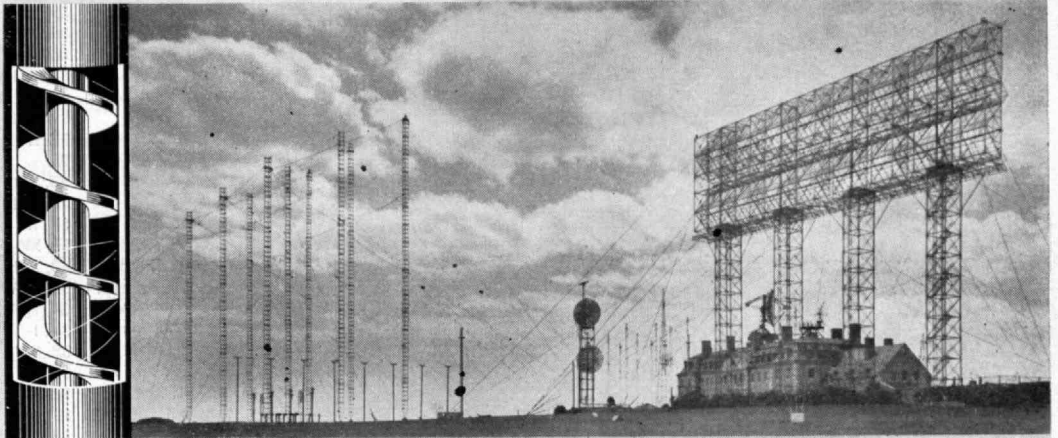
Nuclear Products Division



CORPORATION

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Demonstrating Outstanding Characteristics
for Forward Scatter Systems . . .



Round Hill Field Station, M.I.T.'s Lincoln Laboratories, South Dartmouth, Mass.

Styroflex Coaxial Cable

A recent series of experimental tests conducted by the Round Hill Field Station of M.I.T.'s Lincoln Laboratories at South Dartmouth, Mass., clearly showed that Styroflex coaxial cable has a number of practical advantages when used as the connecting link between the antenna and transmitter or receiver in forward scatter systems.

The tests demonstrated the particular importance of these general Styroflex characteristics:

1. 1000-foot continuous lengths without splices.
2. Low attenuation.
3. Excellent electrical properties.
4. Capacity to handle high power.
5. No age deterioration regardless of climatic conditions.

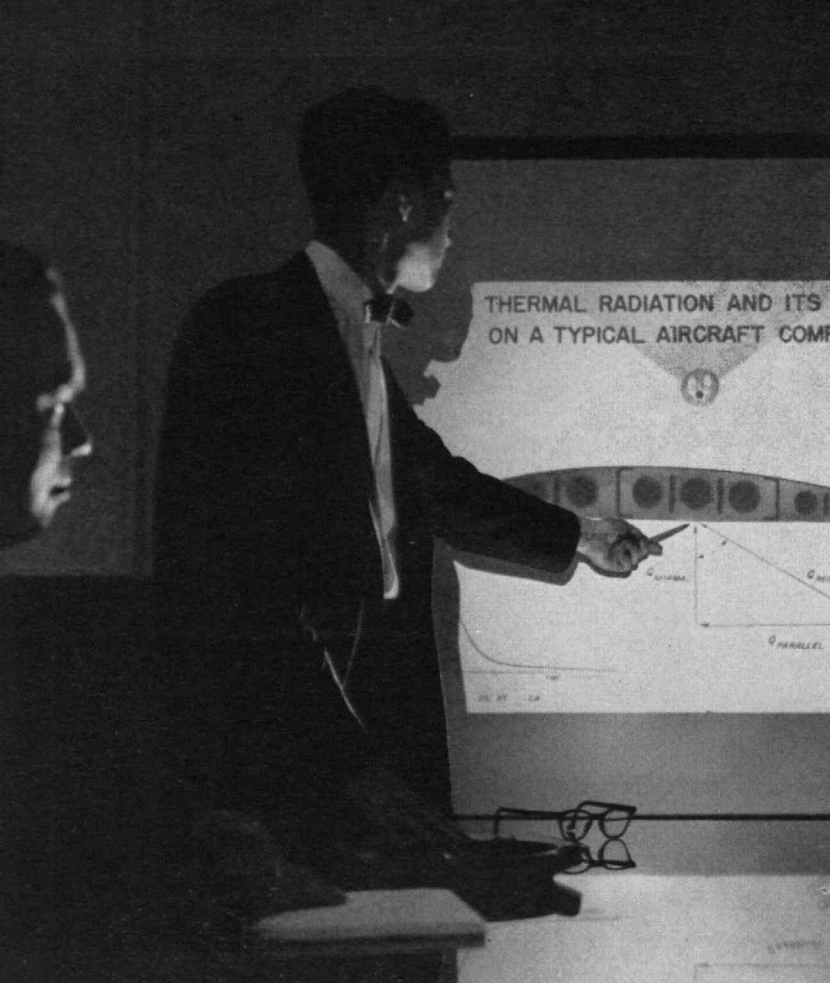
An additional advantage of Styroflex—when used as a receiving transmission line—is its extremely low inherent noise level.

Inquiries regarding specific applications for Styroflex are invited.



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M.I.T. GRADUATES AT ALLIED RESEARCH

Name	Degree & Course	Year	Position
Lawrence Levy	SM, XVI	1948	President
Daniel J. Fink	SB, XVI	1948	Chief Engineer
	SM, XVI	1949	
Oiva R. Anderson	SB, XVI	1947	Senior Engineer
	SM, XVI	1948	
Martin Annis	SB, VI	1944	Chief Project Scientist
	PhD, VIII	1951	
Claude W. Brenner	SB, XVI	1947	Chief Project Engineer
	SM, XVI	1948	
Arthur B. Cicero	SB, II	1953	Staff Research Engineer
	SM, II	1954	
Carolus M. Cobb	SB, V	1944	Senior Chemist
	PhD, V	1951	
Richard E. Ellis	SB, VIII	1952	Research Physicist
Lawrence E. Golden	SB, XVI-A	1952	Staff Research Engineer
	SM, XVI	1953	
William D. Green, Jr.	SB, II	1943	Chief Project Engineer
	SM	1949	
David C. Knodel	SB, XVI	1947	Senior Engineer
	SM, XVI	1951	
Philip Marshall	SM, II	1955	Research Engineer
Roger W. Milligan	SB, XVI	1950	Research Engineer
Arthur C. S. Roberts	SB, XVI	1947	Senior Engineer
Leopold J. Rossbach	SB, VI-A	1950	Senior Electronic Engineer
	SM, VI-A	1951	
Melvin R. Rubin	SM, I	1951	Research Engineer
Richard Rubino	SB, XIV	1952	Personnel Manager
Charles M. Shure	SB, XVI	1957	Research Engineer
Calvin Y. Sing	SM, XVI	1954	Staff Research Engineer
Thomas B. Smith	SB, VI	1955	Research Engineer
John H. Stewart	SB, XVI	1953	Research Engineer
Robert A. Summers	SM, XVI	1946	Senior Engineer
	ScD, XVI	1954	

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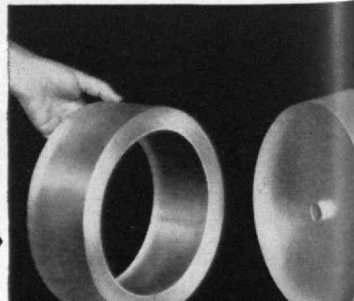
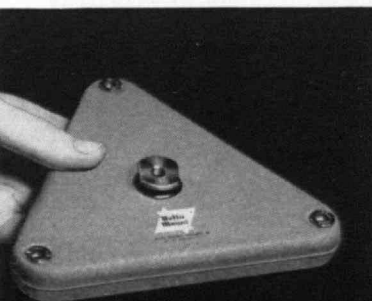
Also from Allied Research: THESE ADVANCED-CONCEPT PRODUCTS

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◀ This Delta Mount has been designed and tested to isolate airborne electronic equipment from severe environmental vibra-

▶ Plastic scintillators are easily machined and can be furnished in sizes up to one ton in varying shapes and surface textures.



FILLING A NEED...

During the nineteenth century, the mechanics of fluids branched off the main stem of physical science. Physics concentrated on the elaboration of the structure of molecules and their components; the development of fluid mechanics was guided by the need for understanding the macroscopic phenomena associated with ships, turbines, airplanes, etc. The separation between these disciplines has been reflected in the organization of university departments for several generations, so that there is little contact between physics and fluid mechanics departments. This lack of contact has been reflected in our scientific graduates who typically have been trained in one or the other of these disciplines, but almost never in both.

Very suddenly, however, the country faced an important problem when we had to meet the challenge of rapidly creating an operable intercontinental ballistic missile. The re-entry of this missile into the earth's atmosphere was regarded as a very difficult problem; largely because here, for the first time, we faced a scientific problem involving the mechanics of a fluid closely coupled with important aspects of molecular physics. The Avco Research Laboratory was created to fill this need. Its senior scientific personnel were trained in classical aerodynamics, atomic physics, and physical chemistry, and saw in this interdisciplinary area a unique opportunity to broaden their background and to make creative contributions in a field in which the great advances are still to be made.

The laboratory has been successful in supplying vital information which only a year ago was generally held to be obtainable only in costly and time-consuming flight experiments. Our research success has resulted in a large development responsibility being entrusted to this company.

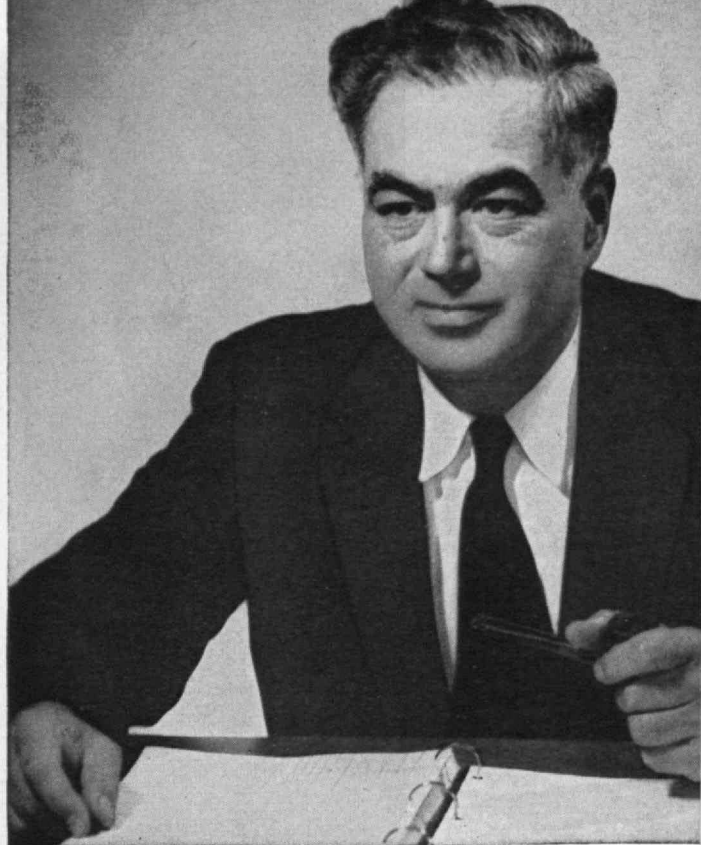
The interdisciplinary strength we have acquired will enable us to play a major role in such problems as the re-entry of manned vehicles into the atmosphere from satellite orbits, in the creation of a thermonuclear reactor, and in other fields involving the dynamics of high temperature gases.

Arthur Kantrowitz

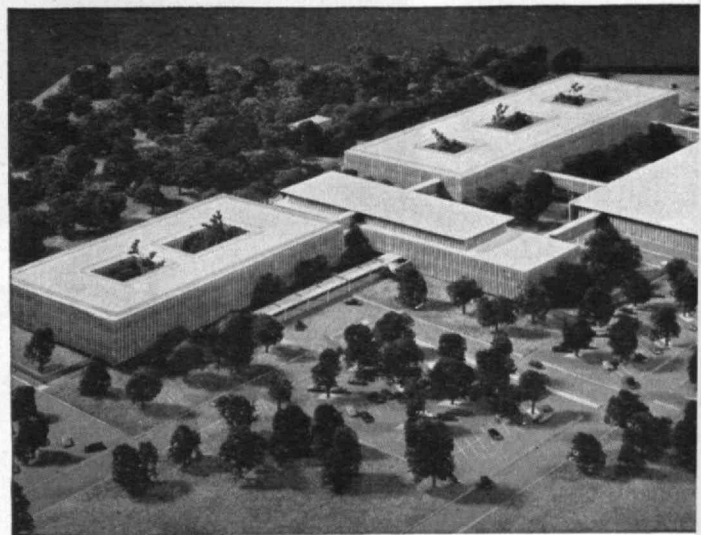
Dr. Arthur Kantrowitz, Director
AVCO RESEARCH LABORATORY
a unit of the

avco

**research and
advanced development
division**



Dr. Arthur Kantrowitz



Pictured above is our new Research Center now under construction in Wilmington, Massachusetts. Scheduled for completion in early 1958, this ultra-modern laboratory will house the scientific and technical staff of the Avco Research and Advanced Development Division.

The Avco Research Laboratory at Everett, a unit of A.R.A.D., has a few openings for leading scientists who can help us expand our capabilities in:

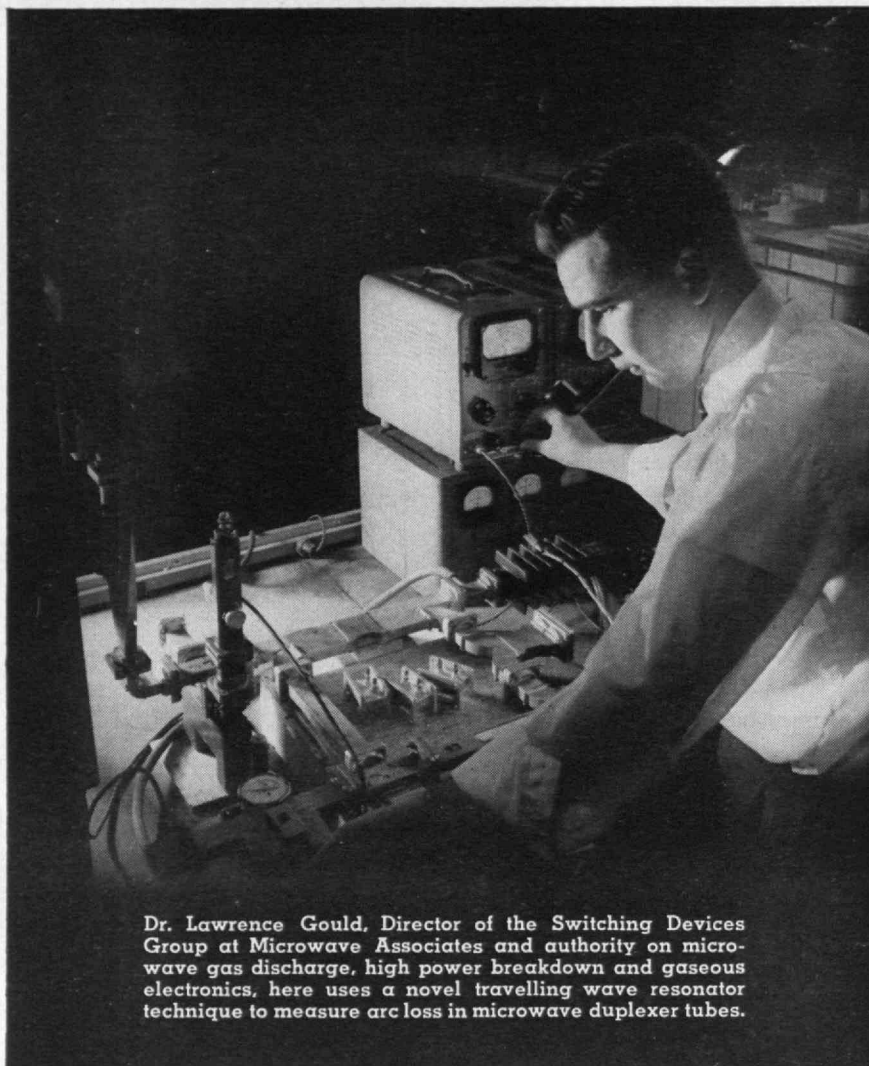
**Theoretical, Experimental and Solid State Physics
Physical Chemistry—Aerodynamics—Physical Electronics**

There are other career opportunities for exceptionally qualified scientists and engineers in the Development Laboratory at Lawrence and the Electronics Laboratory at Boston, in such fields as:

**Science:
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**Engineering:
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Write to Dr. R. W. Johnston, Scientific and Technical Relations,
Avco Research and Advanced Development Division,
20 South Union Street, Lawrence, Massachusetts.



Dr. Lawrence Gould, Director of the Switching Devices Group at Microwave Associates and authority on microwave gas discharge, high power breakdown and gaseous electronics, here uses a novel travelling wave resonator technique to measure arc loss in microwave duplexer tubes.

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Willard Foster	- '32
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Julian Pathe	- '48
Allen Swartz	- '50
William Toorks	- '36.

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and maximum band width . . . or you may direct your talents toward improving magnetrons, wave-guide components, silicon diodes, or other products.

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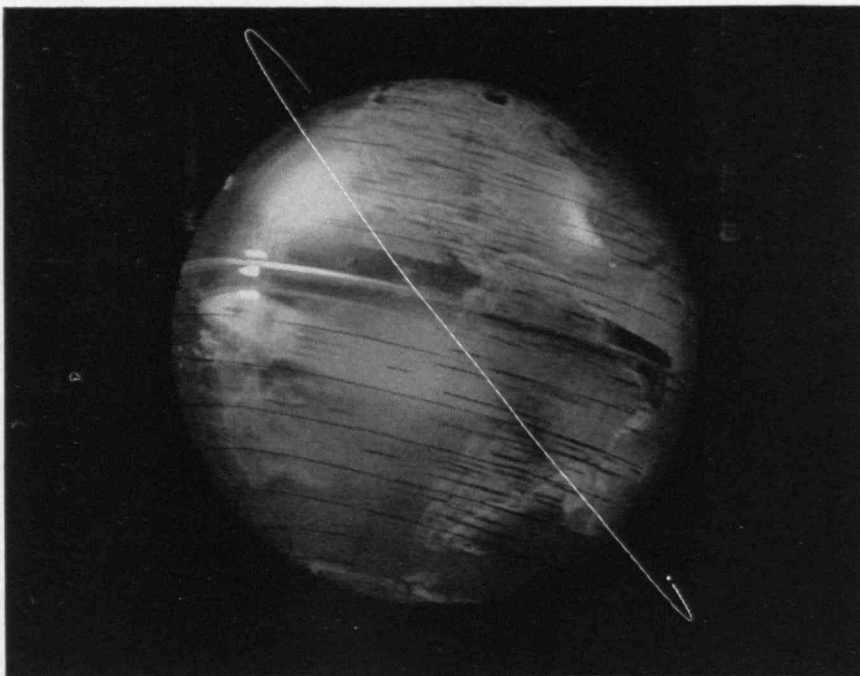
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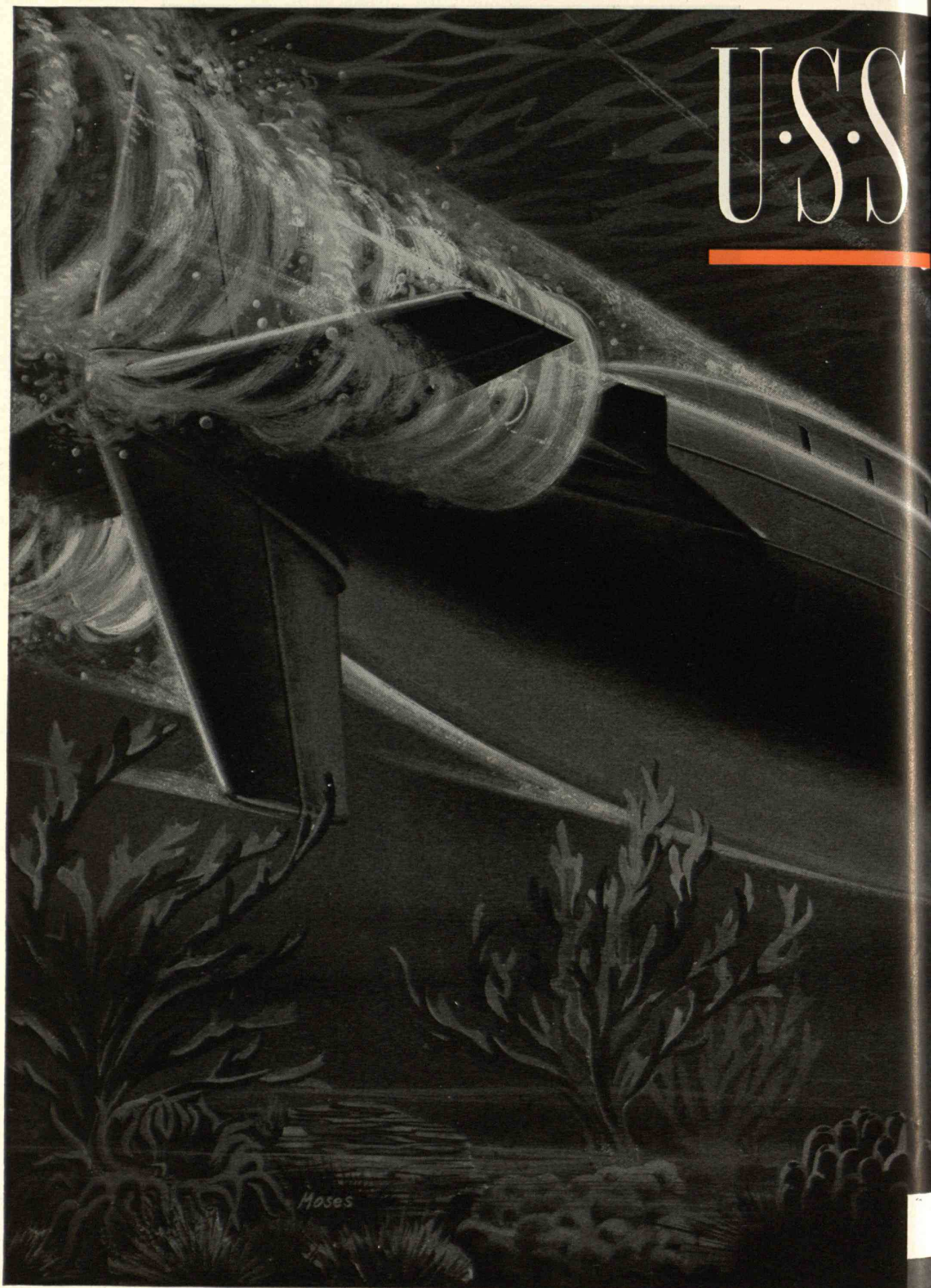


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The big show of 1958 will be watched by more people throughout the world than any other single event in history. For the coming Martin satellite program is the most dramatic engineering development of our time, and many of its most important supporting roles are in the basic field of servo engineering and instrumentation. If this is your kind of show, and you're interested in one of the great engineering opportunities of today and tomorrow, act fast... The count down has begun. Contact J. J. Holley, Dept. TR-7, The Martin Company, Baltimore 3, Maryland.

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Moses

Nautilus

first
atomic submarine
uses

TIGER BRAND ELECTRICAL CABLE

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We cannot recall a more *critical* application of electrical cable than this new atomic-powered submarine. And from stem to stern, this amazing ship is laced with Tiger Brand Electrical Cable.

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FOR EVERY SPECIAL JOB!

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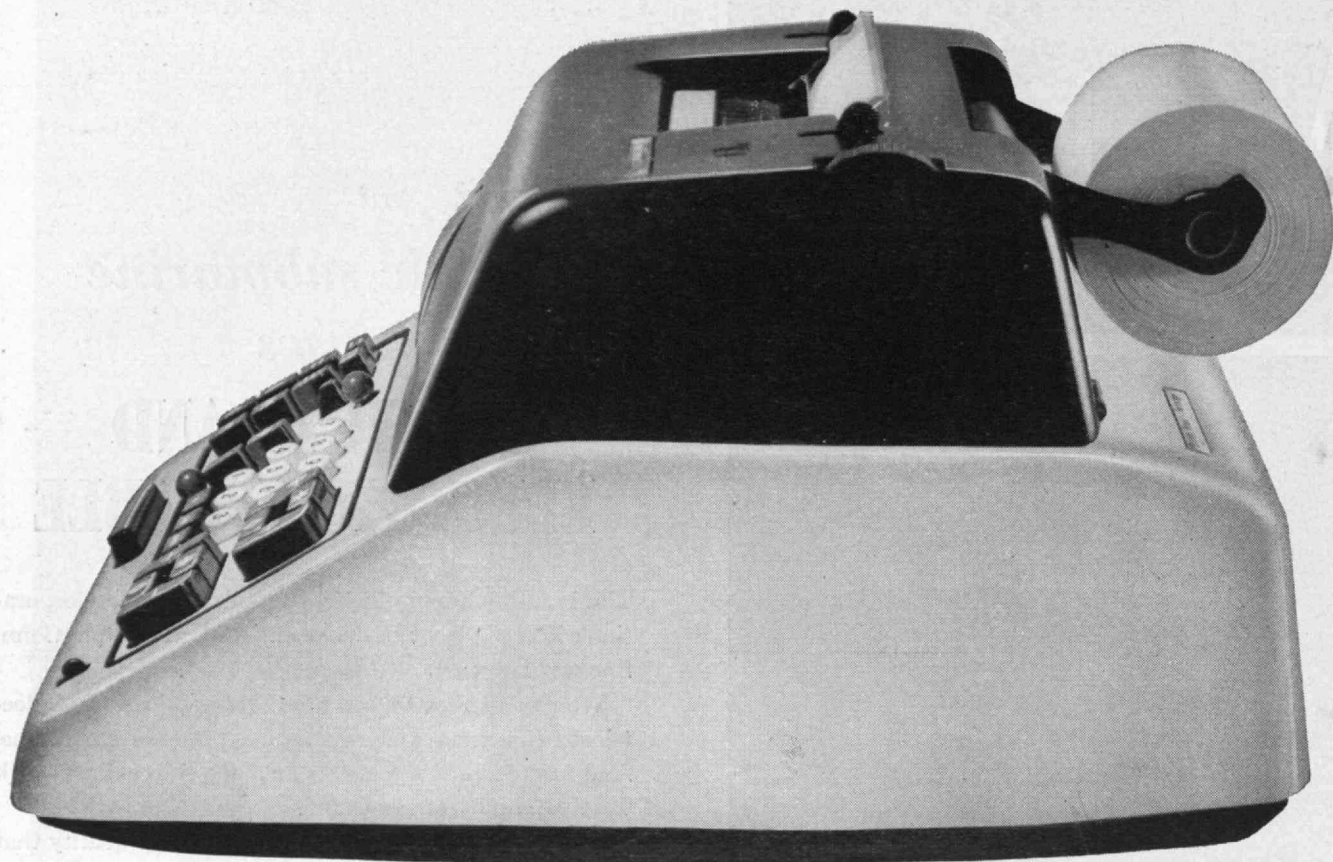
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USS Tiger Brand

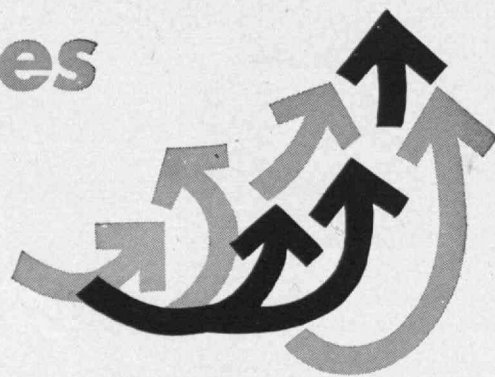
**ELECTRICAL
WIRE & CABLE**



UNITED STATES STEEL



olivetti announces a new kind of desk calculator



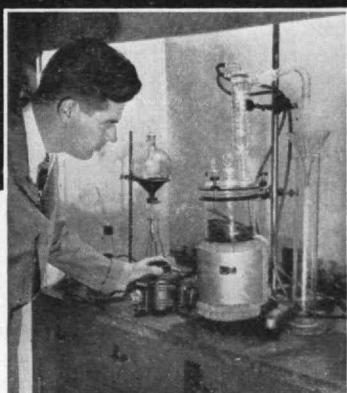
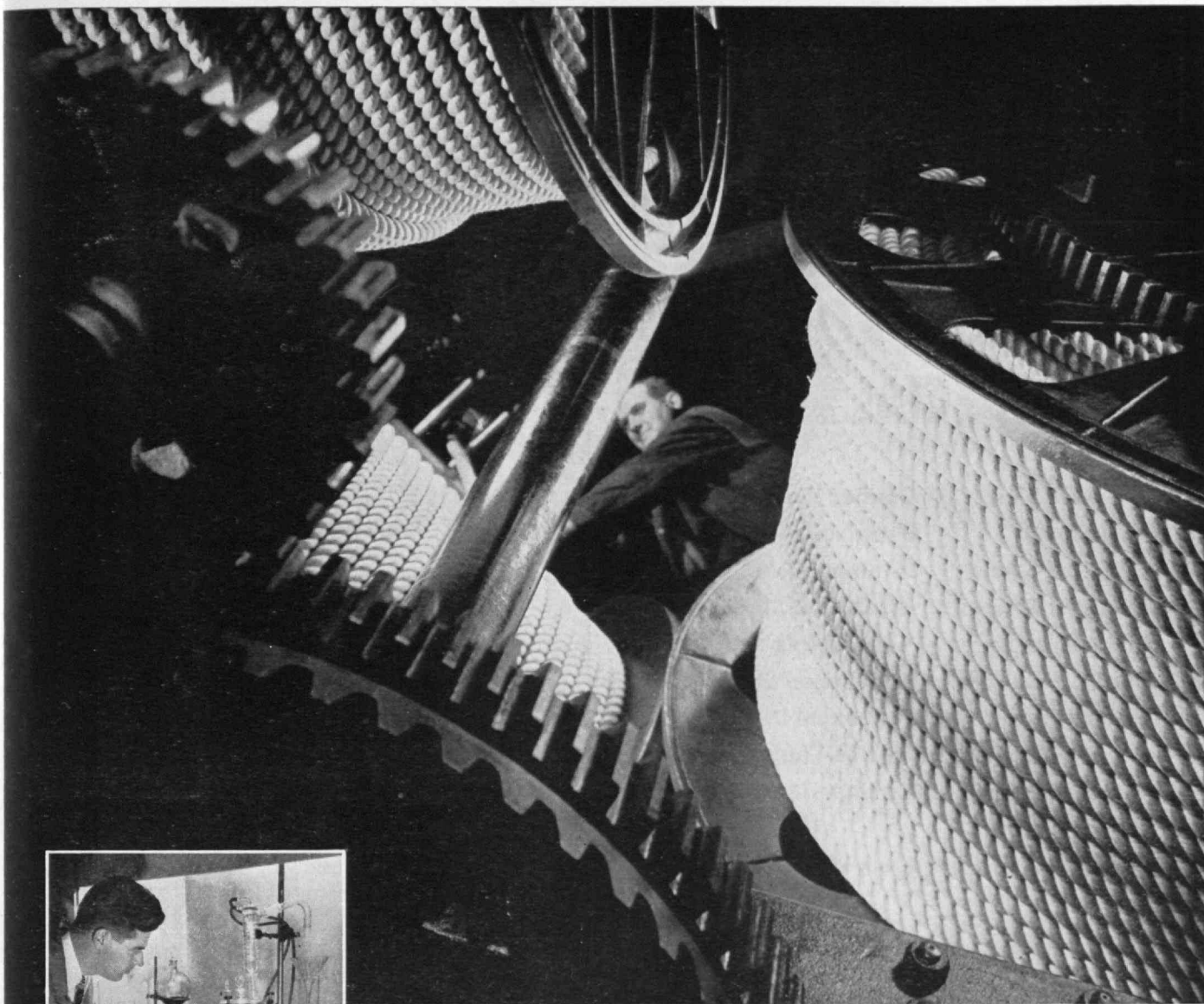
The remarkable new Olivetti Tetractys processes business figures at high speeds formerly associated only with non-printing calculators, and *prints a complete tape record*. New in concept, new in range of application, it is the first (and only) dual-register printing calculator. It provides automatic accumulation, an automatic constant, and a "memory."

In combined operations, it eliminates the need to re-enter intermediate figures; these are *automatically* stored

in the second register, or in the "memory." It automatically accumulates products, quotients and totals, to give a grand total. It can multiply a first number by a second number by a third number and so on, without re-entry of intermediate products. Its unique constant locks in and clears out automatically.

These features (plus others) enable the Tetractys to process many kinds of figurework faster than they have ever been done before. May we demonstrate this to you?

For a demonstration, or for more information, write or wire Olivetti Corporation of America, 580 Fifth Avenue, New York 36, N. Y. Olivetti sales and service available in all 48 states.



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R. M. Arnold '22	Richard K. Pitler '49
Victor Ardito '56	Dr. Sundaresan Ramachandran '56
Dr. Henry L. Bishop '56	A. H. Riehl '41
Henry M. Butler '50	Clifford J. Rounds '52
James C. Fulton '53	Bennett Sack '54
Dr. Laurence C. Hicks '33	Richard P. Simmons '53

SD's

M.I.T. Graduates

F. Francis Birch, 1951

David Brown, 1940

John W. Colton, 1948

Robert S. Davis, 1955

Edward J. Fradkin, 1946

Manfred Gans, 1951

A. W. Gessner, 1954

Ralph Landau, 1941

John H. Lutz, 1943

George J. Marlowe, 1950

Robert H. Perry, 1951

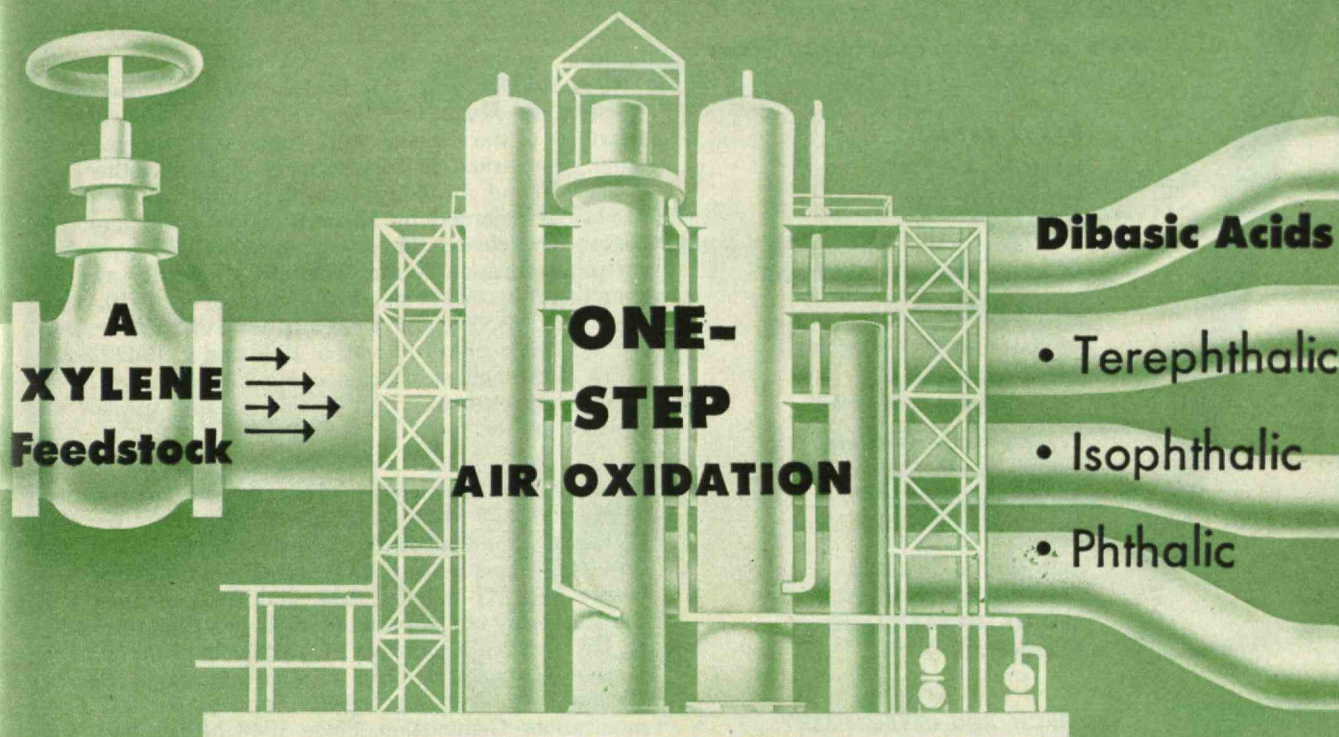
Max Sachs, 1946

Peter H. Spitz, 1949

Charles N. Winnick, 1948



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According to Dr. Ralph Landau, Executive V.P. of SD, "Never before has a private engineering, research and design group created wholly by itself, with its own funds, such a major technical discovery and development in the chemical field. The sale of this process further confirms SD's position as the world's leading

independent company devoted to process development and plant design in the organic chemical field. In only 10 years, SD has undertaken over forty different chemical plant projects, a greater number and diversity than those handled by all but the largest chemical operating companies."

SD Group Sells Exclusive Worldwide Rights to Standard Oil Company (Indiana)

Having acquired exclusive worldwide rights, Standard decided to build a \$10,000,000 plant based on this aromatic chemical breakthrough. SD is designing this plant for Indiana's subsidiary, Amoco Chemicals Corporation.

The successful conclusion of this project by SD and its associated companies is another example of SD's creative approach to many industrial chemical problems. In this case, Amoco's plant will have a new "production flexibility." One basic plant and equipment will produce a variety of chemicals from a

variety of feedstocks. This is an almost complete answer to one of a chemical company's major problems — shifting markets and raw material sources.

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THE TABULAR VIEW

Stream of Life — In the Baccalaureate Address which GEORGE R. HARRISON, Dean of Science, delivered to members of the Class of 1957 (page 491), the graduates were admonished to seek security of spirit rather than peace of mind. In today's complex world, knowledge of science is regarded by Dean Harrison as an important factor in achieving this objective, as well as a necessity for any educated person. Stanford University awarded him the A.B., A.M. and Ph.D. degrees in 1919, 1920, and 1922 respectively. Dr. Harrison came to the Institute's Department of Physics in 1930 and in 1942 became Dean of the School of Science. He is best known for his work in spectroscopy, but is also an able speaker and brilliant author.

Equality and Excellence — This year's Commencement Address (page 495) was given by JOHN WILLIAM GARDNER, President of the Carnegie Corporation of New York, who received the A.B. degree from Stanford University in 1935 and the A.M. and Ph.D. degrees from the University of California in 1936 and 1938 respectively. He has been a professor of psychology, captain in the Marine Corps, and head of Latin-American Section, Foreign Broadcast Intelligence Service, Federal Communications Commission. Since 1946 he has been with the Carnegie Corporation of New York, becoming its president in 1955. Dr. Gardner's Commencement Address was concerned with educational facilities designed to maximize our national individual talents.

Knowledge Brings Obligation — The Farewell Address to this year's graduates (page 496) was given by Chancellor J. A. STRATTON who stressed the responsibilities which professional persons have to use their intellect and experience for advancing the common account. Chancellor Stratton received the S.B. and S.M. degrees from M.I.T. in 1923 and 1926 respectively, and the Sc.D. degree from the Eidgenossische Technische Hochschule in Zürich in 1927. He has also studied at Grenoble, Toulouse, Munich, and Leipzig. Dr. Stratton has been at M.I.T. since his appointment as assistant professor of electrical engineering in 1928. He was the first head of the Research Laboratory of Electronics, and the Institute's first Provost and also its first Chancellor, a post created in July, 1956. This June, he received an honorary LL.D. from Northeastern University.

Physical Sciences — JAMES B. FISK, '31, Executive Vice-president of the Bell Telephone Laboratories discussed progress in the physical sciences, especially in electronics and communications, at the Alumni Day Symposium on "Today's Science — Tomorrow's Promise" (page 497). He received the S.B. degree in aeronautical engineering and Ph.D. in physics from M.I.T. in 1931 and 1935 respectively and the M.A. degree from Harvard University in 1947. He was Proctor travelling fellow at Trinity College, Cambridge, a member of the Society of Fellows at Harvard, and has had extensive teaching and industrial affiliations in applied science, especially in the fields of electronics and nuclear science.

Science Education — JERROLD R. ZACHARIAS, Professor of Physics at the Institute spoke on science education at the Alumni Day Symposium (page 501). From Columbia

(Concluded on page 460)

THE TECHNOLOGY REVIEW

WHICH OF THESE JOBS CAN YOU FILL?

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with 2 or
more years
experience
in:

COMPUTER AND CONTROL ENGINEERING

- Gyro Development
- Servo-mechanisms and Feedback Systems
- Analog Computers
- Military Specifications
- Electronic Circuitry
- Magnetic and Transistor Amplifiers
- Network Design
- Inverters
- AC and DC Servo Motors
- Electronic Research
- Fire Control Systems
- Microwaves and Radar
 - Antennas
 - Beacons
 - Receivers
 - Transmitters
 - Pulse Circuits
- Digital Computers and Data Processing

MISSILE GUIDANCE ENGINEERING

- Gyro Development
- Servo-mechanisms and Feedback Systems
- Analog Computers
- Military Specifications
- Electronic Circuitry
- Magnetic and Transistor Amplifiers
- Network Design
- Inverters
- AC and DC Servo Motors
- Electronic Research
- Missile Control Systems

MECHANICAL ENGINEERS

with 2 or
more years
experience
in:

- Inertial Guidance Systems
- Gyro Development
- Military Specifications
- Servo-mechanisms
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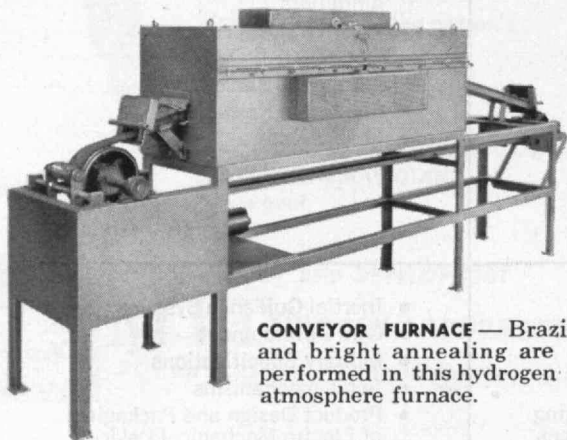
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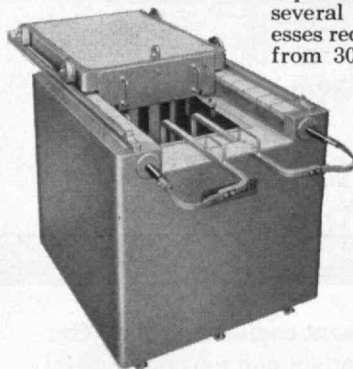
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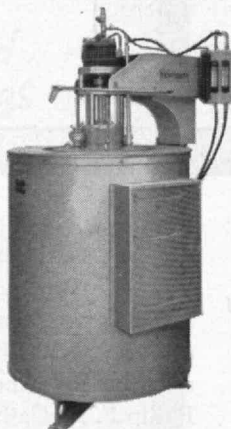
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THE TABULAR VIEW (Concluded from page 458)

University he received the B.A., M.A., and Ph.D. degrees in 1926, 1927, and 1933, respectively. Dr. Zacharias joined the Radiation Laboratory at M.I.T. in 1940 and has been associated with the Institute ever since, joining the Department of Physics in 1945. He organized and was head of the Laboratory for Nuclear Science until this year, and is now Chairman of the Physical Science Study Committee of the National Science Foundation.

Next Hundred Years — In his ninth annual report to Alumni (page 504), President JAMES R. KILLIAN, JR., '26, reviewed M.I.T. events of the past year, enumerated a ten-point program of objectives to be achieved as M.I.T. concludes its first century of operation, and announced the initiation of a fund to increase Faculty salaries. As usual, the President's annual report was an encouraging, stimulating, and forward-looking document well received by Alumni and friends of M.I.T. Dr. Killian is so well known to Alumni that a biography is unnecessary here. It is sufficient to mention that, among his most recent honors are the French Legion of Merit and the Public Welfare Medal of the National Academy of Science, both awarded within the past few months.

Cardinal and Gray — In addition to the signed feature articles enumerated above, The Review's running account of the year-end activities will be found beginning on page 507.

The Review is not published during the summer months following July. This issue, therefore, concludes Volume 59. Number 1 of Volume 60 will be published on October 28 and dated November. Readers who bind their copies are reminded that if they possess nine issues of Volume 59, their files are complete. An index to the volume will be ready on September 16 and will be supplied post free upon request.

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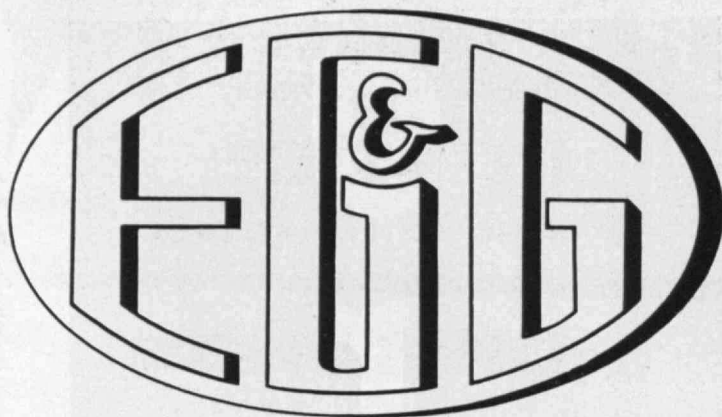
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The Taxpayer

Are high taxes reducing your incentive to work harder and earn more?

IF YOU'RE ONE of the more than 65 million Americans who hold down a job, you probably work about 40 hours a week.

But did you ever stop to consider that taxes are so high today you work for yourself only 27 of those 40 hours? The other 13 go to pay your share of the cost of government.

No one expects to live without taxes, obviously. But when they take more than \$110 billion, or about one dollar out of every three earned, something's wrong.

You pay these taxes in more ways than you know, too.

If you lived in California, for instance,

made \$7,500 last year, and listed a wife and two children as dependents, you were taxed these ways to start with: Federal income \$875, Social Security \$95, State income \$25, Property tax \$325, Auto license tax \$40, State and Local sales tax \$75 and Telephone tax \$10.

This adds up to \$1445 and it's only the beginning.

Did you buy a car? Figure another \$175 tax. The tax on the gasoline to run your car was at least \$65. You also paid a 10% tax every time you bought a plane or train ticket or spent a dollar at the movies.

And you're still not through. Because

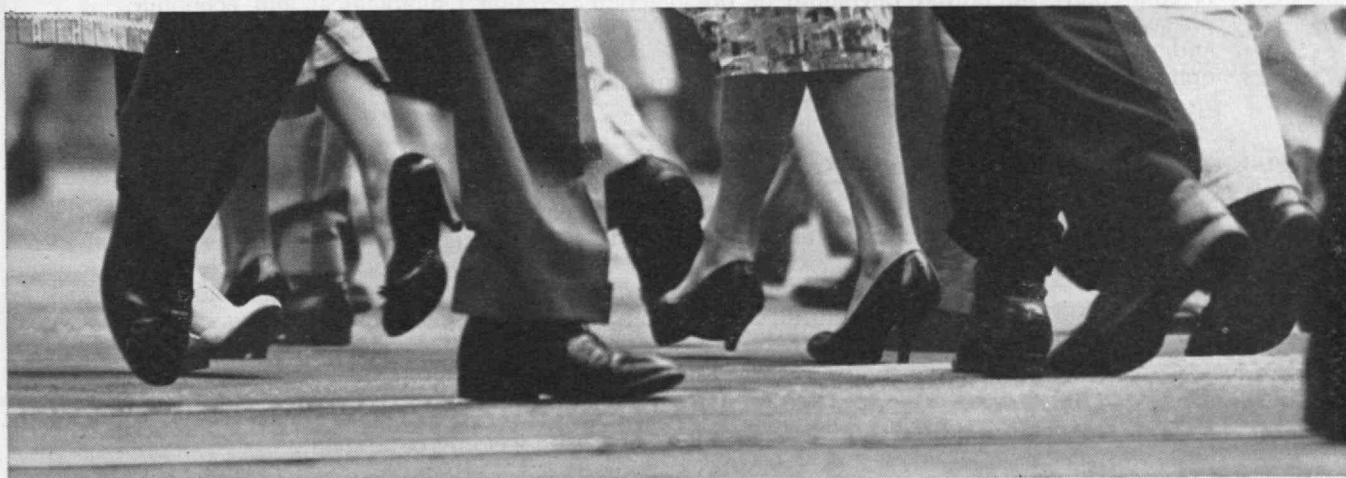
every company that made anything you bought had to pay taxes on practically everything that went into the product.

These thousands of indirect taxes were eventually passed on to you as part of the cost of your purchases.

The result? At least one-third of what you earned went to pay taxes in one form or another.

The real danger is obvious: taxes this high may be so discouraging that you have less incentive to work harder, earn more money and produce more.

YOUR COMMENTS ARE INVITED. Write: The Chairman of the Board, Union Oil Co., Union Oil Bldg., Los Angeles 17, Calif.



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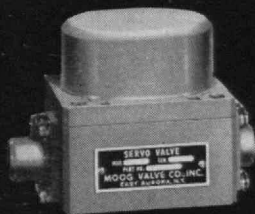
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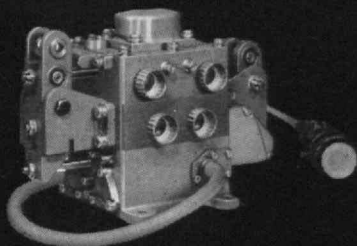
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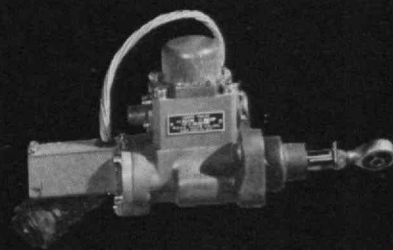
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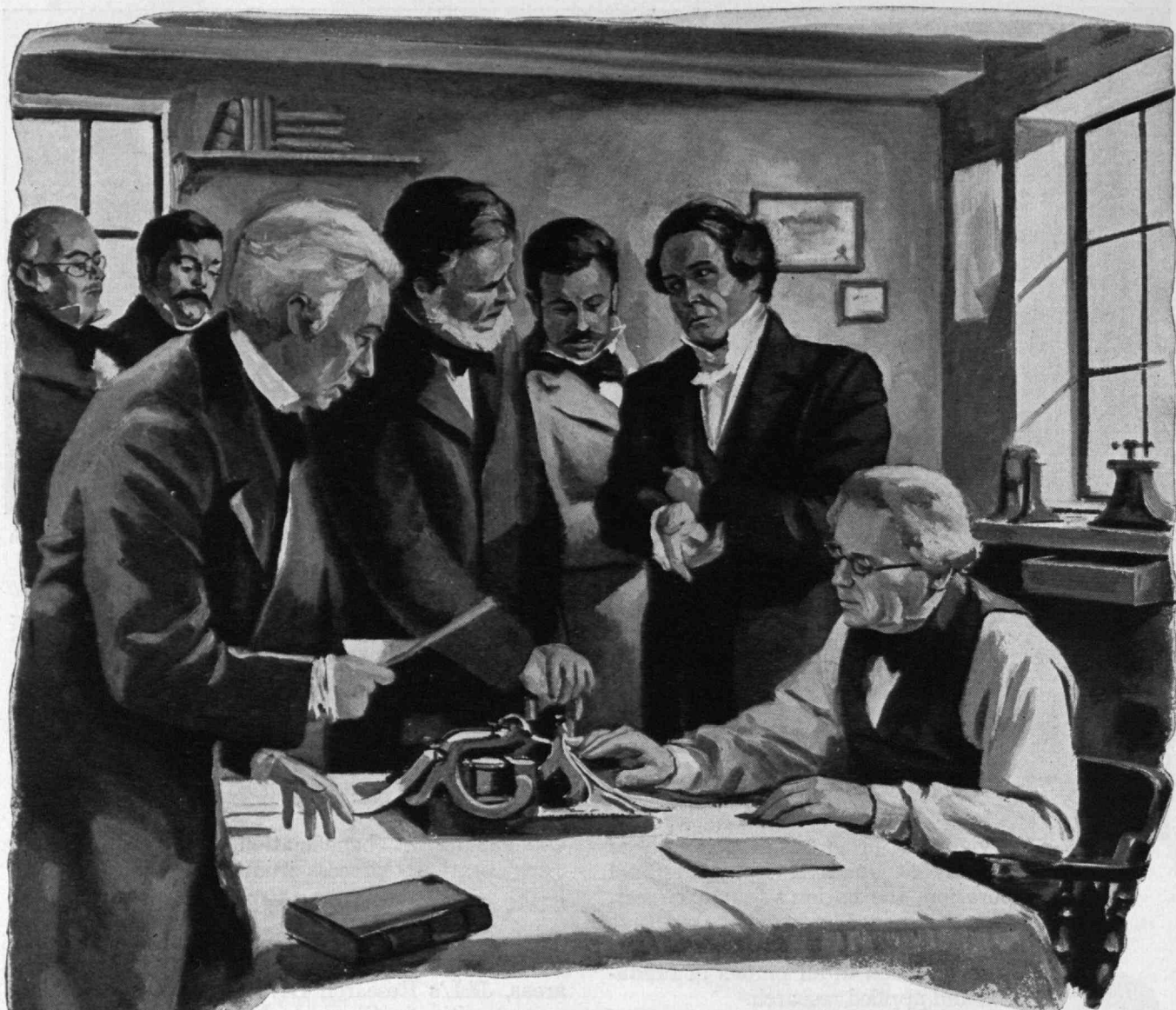
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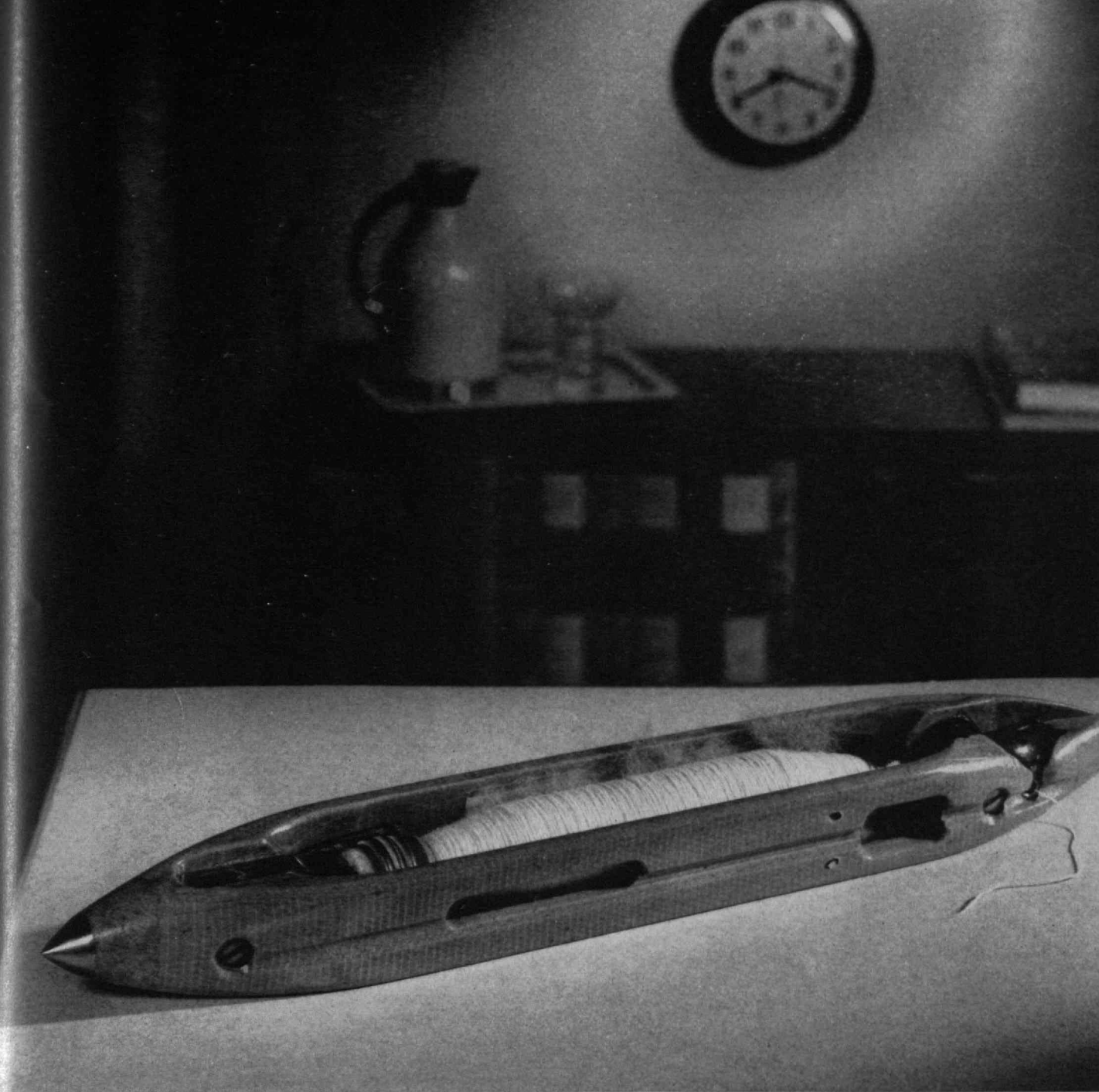
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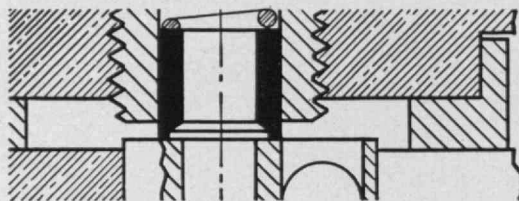
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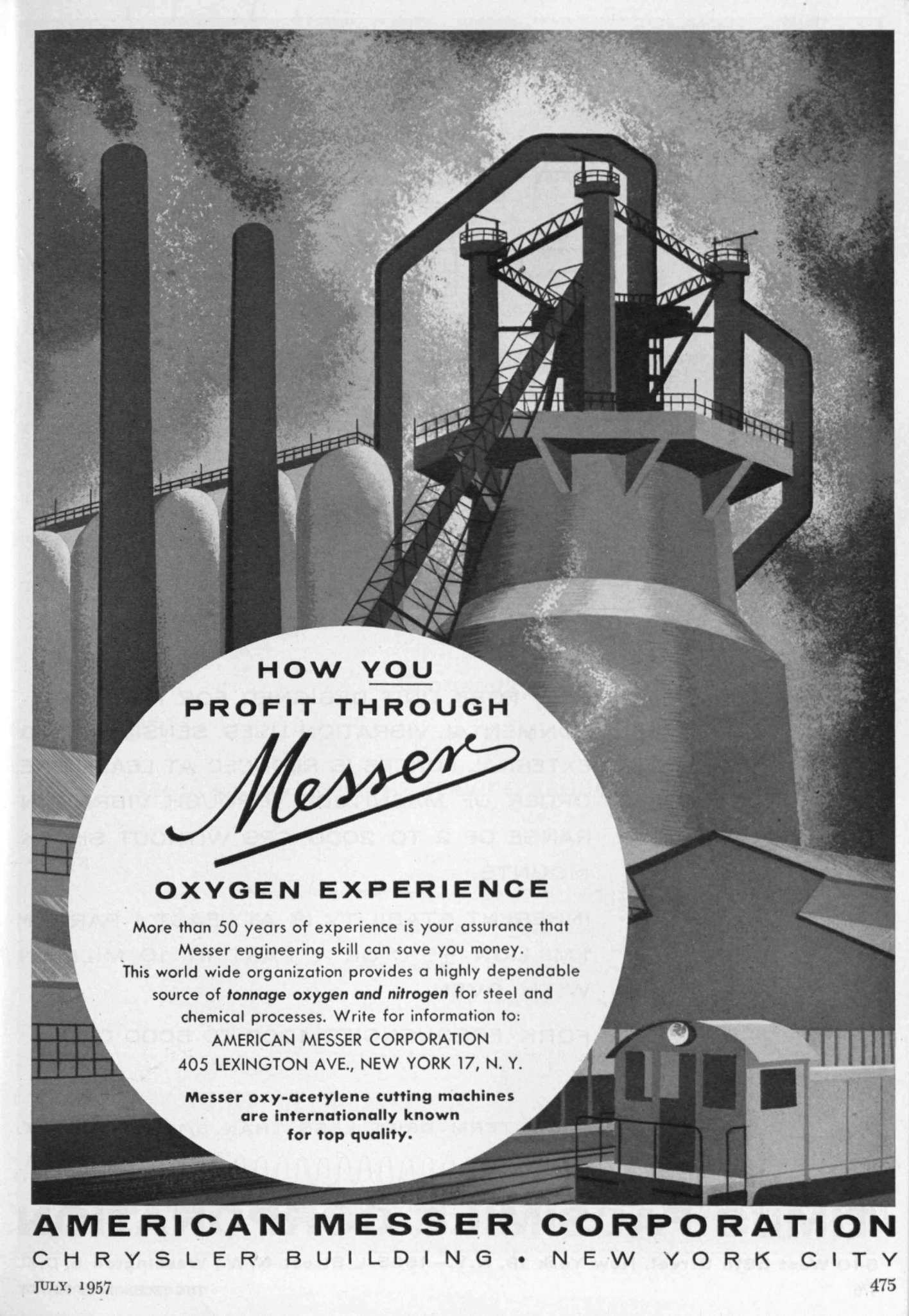
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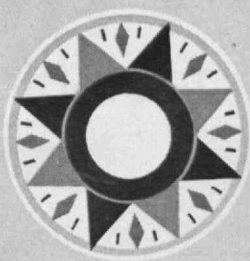
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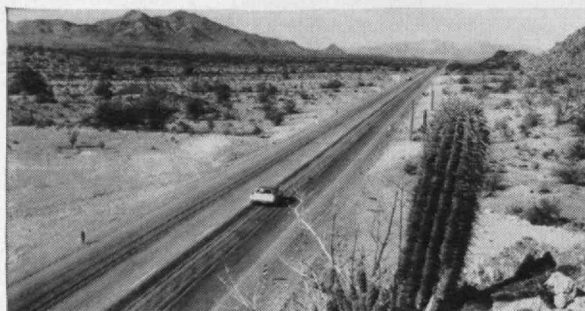
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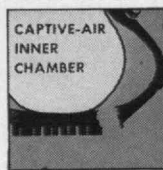


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THE TECHNOLOGY REVIEW

Mace, in black walnut case, made by Leverett Cutten, '07, and presented to the Institute upon the 50th anniversary of his class' graduation from M.I.T.



Technology Review

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Edited at the Massachusetts Institute of Technology

VOL. 59, NO. 9

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JULY, 1957

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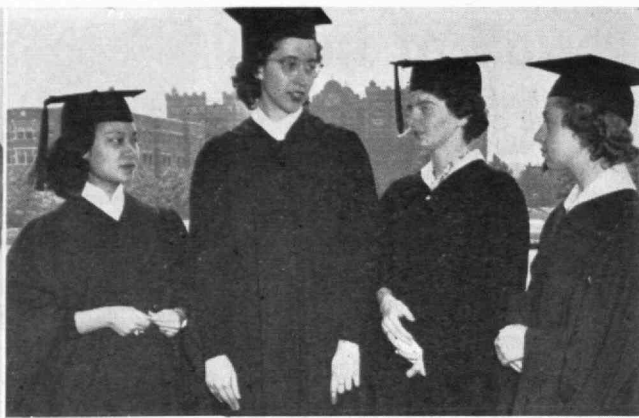
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Signs of the Times

In clockwise order, beginning at upper left-hand corner, are these typical views of year-end events at M.I.T.: (1) Chancellor J. A. Stratton, '23; Rear Admiral John A. Snackenber; Major General Edward H. Underhill; and Brigadier General Charles C. Calloway prior to commissioning exercises; (2) Fuhsi Tjian Ling, Marilyn Schranze, Emma M. Duchane, and Virginia D. Hermann, four of about a dozen women who received M.I.T. degrees in June; (3) As Commencement Day Marshal, Theodore T. Miller, '22, receives mace from Leverett H. Cutten, '07, for use in commencement procession; (4) Bryant Nichols, '07, and Thomas E. Sears, Jr., '32, watch as Gilbert M. Roddy, '31, adjourns Alumni Day banquet; (5) Arthur Fiedler conducting the Boston Pops Orchestra in Kresge Auditorium; (6) Joseph J. Snyder, '44, and John J. Desmond, Commissioner of Education for Massachusetts follow Walter Humphreys, '97, in commencement procession; (7) President Killian and Harold E. Edgerton, '27, examine time capsule prior to depositing it in concrete vault sunk in ground near entrance to Compton Laboratories.





The Trend of Affairs

Heads Industrial Relations

■ Major General James McCormack, Jr., '37, has been appointed Vice President for Industrial and Governmental Relations at the Institute, according to President Killian. He will succeed Vice Admiral Edward L. Cochrane, '20, who retired July 1.

General McCormack came to M.I.T. in 1955 as special adviser to the President after his retirement from the Air Force. Last year he also became president of the Institute for Defense Analyses, an agency established by M.I.T. and four other educational institutions to conduct scientific analysis work for the Department of Defense.

As vice president, General McCormack will represent the Institute in external relations with government and industry. He will have general supervision of policies of the Division of Sponsored Research, of Lincoln Laboratory in Lexington, the Instrumentation Laboratory in Cambridge and the Operations Evaluation Group in Washington.

General McCormack was born in Chatham, Louisiana, on November 8, 1910. He was graduated from West Point in 1932, was a Rhodes Scholar at Oxford University, receiving a B.A. degree in 1935, and took the degree of master of science in civil engineering at M.I.T. in 1937. During World War II, General McCormack served as a general staff officer in the War Department and with the 12th Army Group in Europe. After the war he was Director of Military Applications of the Atomic Energy Commission. His final military service was as Director of Research and Development of the Air Force.



James McCormack, Jr., '37

City Planning Head

■ John T. Howard, '35, one of the leading planning authorities in the country, has been appointed head of the Department of City and Regional Planning at the Institute, President Killian announced late in May. He has also been promoted from associate professor to full professor. As head of the department, Professor Howard will succeed Professor Frederick J. Adams, who will devote his full time to teaching.

Professors Adams and Howard are members of the firm of Adams, Howard, and Greeley, which has consulted on such assignments as the development of a metropolitan plan for the San Francisco Bay area and the planning of Ghandidham, new port city in India. The firm has been consultant for Boston, Worcester, Hartford, and many other cities in New England and other states.

During the past two years, Professor Howard has devoted much of his time to advising the National Capital Regional Planning Council in the development of a metropolitan plan for the 2,000-square-mile area around Washington, D.C.

Professor Adams joined the faculty of M.I.T. in 1932 and Professor Howard was one of his first students, receiving a degree of bachelor of architecture in city planning in 1935 and that of master in city planning in 1936.

Professor Howard had studied at Antioch College and Yale University. He was planning director of Cleveland for seven years before returning to M.I.T.

He and Professor Adams each served two years as president of the American Institute of Planners.



John T. Howard, '35



Ralph Lowell, Trustee (left), congratulates Arthur L. Townsend, '13, who, as Director of Lowell Institute School, won the 1957 James H. McGraw Award for Technical Institutes.

Lowell Institute Events

■ Nearly 100 young men received certificates attesting to satisfactory completion of courses of study offered by the Lowell Institute School at graduation exercises held in Huntington Hall, M.I.T., on the evening of Thursday, May 23. Ralph Lowell, Trustee of the School and a member of the M.I.T. Corporation, presented certificates to members of the Class of 1957.

Arthur L. Townsend, '13, Director of the Lowell Institute School and Associate Professor of Mechanical Engineering at M.I.T., presided at the exercises and presented the students for their diplomas. Jacob P. Den Hartog, Head of the Department of Mechanical Engineering, spoke on behalf of M.I.T. under whose auspices L.I.S. courses of instruction are given.

The principal address of the 53d graduation exercises was given by Frederick W. Argue, Engineering Manager and Vice-president of the Stone and Webster Engineering Corporation. As one who has

reached the top of the professional ladder and directs the work of a comprehensive engineering, design, and construction organization in the public utility field, Mr. Argue presented a brief but effective address on the value of continued study by those employed in industry.

John I. Dalco, engineer with the Stone and Webster Engineering Corporation and a member of the L.I.S. Class of 1922, presented the Charles Francis Park Medal to Herbert L. Lovejoy, Jr., this year's top-ranking graduate of the Lowell Institute School. Mr. Lovejoy completed studies in the electrical course and is employed by the Doelcam Division of the Minneapolis-Honeywell Regulator Company.

Graduation exercises were held on the 65th birthday of Arthur L. Townsend, who became professor emeritus on July 1. Although it could not be announced at the time, Professor Townsend had just been named to be recipient of the eighth annual James H. McGraw Technical Institutes Award as distinguished educator, administrator, and builder of young men. The award recognizes Professor Townsend's four decades of contributions to technical institute teaching, his skill as a teacher, and his championing of high standards in technical education. Presentation was made at the annual meeting of the American Society for Engineering Education, held at Cornell University on June 18. The award is named in honor of the founder of the McGraw-Hill Book Company, and is made on the basis of achievements in technical education, administration, and contributions to technical literature.

Murray P. Horwood: 1892-1957

■ Murray Philip Horwood, Professor of Sanitary Science and Director of Sanitation at M.I.T., died in Providence, Rhode Island, on June 4. He was 64 years old.

A native of New York, Professor Horwood was a graduate of the College of the City of New York. He received the M.S. degree from M.I.T. in 1916 and in that year joined the staff as an assistant in biology. In 1921 he was awarded a Ph.D., specializing in bacteriology, sanitation, public health and sanitary engineering. While on the staff of M.I.T., he had also been an instructor at Wellesley College and had been in charge of public health at Boston University Medical School and Tufts Medical School. He became Professor of Bacteriology and Municipal Sanitation in 1937 and Professor of Sanitary Science in 1944.

Professor Horwood was widely active as a consultant to municipalities and companies on problems of public health and sanitation and was the author of several books and more than seventy papers in those fields. From 1952 to 1954, he was Director of the M.I.T. Educational Project at the Engineering College of the University of Rangoon and conducted several health studies in Burma. At the time that he was fatally stricken he was engaged in a health survey in Bristol, R.I.

Penicillin and Metallurgy

■ Modern progress in synthesizing penicillin and in developing new metals for current technological needs were topics of discussion at the 325th meeting of the Alumni Council, at which Theodore T. Miller, '22, President of the Alumni Association, presided. The meeting, held at the Faculty Club on April 29, was attended by 131 members and guests.

As secretary of the Alumni Association, Donald P. Severance, '38, reported that, between April 23 and May 27, ten M.I.T. clubs had been visited by 13 members of the staff. Oscar H. Horovitz, '22, visited the M.I.T. Club of Hong Kong on April 23 and the M.I.T. Club of Tokyo on May 10; all other visits were to clubs in continental United States. Mr. Severance also announced that the second Alumni Officers' Conference will be held at M.I.T. in September.

As director of the Alumni Fund, Henry B. Kane, '24, reported that, as of May 27, the Alumni Fund for the current year stood at \$495,328 with 11,519 contributors. This is approximately \$20,000 ahead of the figure at the corresponding date in 1956, and there are 1,570 more contributors than last year. Much of the increase in participation is due to the fine efforts of 73 Regional Committees working under the inspiration of Joseph E. Conrad, Regional Fund Director. The region of Kalamazoo has joined the Alumni Council in having 100 per cent of its members

participate in the Fund. According to a tabulation released by the American Alumni Council, M.I.T. was ninth among more than 400 American colleges in Alumni Fund contributions last year, and that in total alumni giving, M.I.T. stood fourth; only Yale, Harvard, and Chicago alumni made a better showing.

As chairman of the Committee on Honorary Members, Samuel C. Prescott, '94, proposed the name of Miss Olive Barnard, Secretary and Technical Assistant in the Department of Business and Engineering Administration, for honorary membership in the Alumni Association. Dr. Prescott's report was accepted with enthusiastic applause.

As executive vice-president of the Alumni Association, H. E. Lobdell, '17, reported on progress which the Alumni Association had achieved during the past year. The ninth and tenth Regional Conferences, in Tulsa, Okla., on February 2, and in Chicago on February 16, were pronounced eminently successful. So, too, were the "M.I.T. Week End in Havana" (February 22-25) and the Ninth Annual Fiesta (March 14-16) staged by the M.I.T. Clubs in Havana and in México City, respectively. Also singled out for mention was the dinner in New York on November 14, 1956, at which honor was paid to a distinguished Alumnus — Alfred P. Sloan, Jr., '95. Mr. Lobdell's annual report also contained significant statistics regarding the age distribution of the members of the Alumni Association.

Upon conclusion of the business portion of the meeting, John C. Sheehan, Professor of Organic Chemistry, spoke on the first successful synthesis of penicillin, tracing the history of the development of penicillin to Fleming's chance observation in 1928. During World War II, at least 1,000 chemists, working in 39 laboratories in the United States and Great Britain, spent an estimated \$20,000,000 trying to synthesize penicillin in a crash program. Although they failed in their immediate objective, much was learned about the structure of the penicillins and of many approaches which could not be used to synthesize this molecule.

The penicillin molecule is not an unusually complex one. Similar molecules, such as those of quinine, morphine, and cortisone had yielded to synthesis. But the penicillin molecule is unstable and disintegrates easily — especially at one point in the process.

Ten new kinds of the synthetic penicillin are now being tested for possible medical use. These types are all antibiologically active and could not have been obtained through the fermentation process. While the new chemical method probably will not be cheap enough to compete with the established fermentation process by which penicillin is derived from molds, it is hoped that the new forms will prove effective against disease organisms now resistant to natural penicillin and against a wider variety of infections. New penicillins might also have less tendency to produce allergic reactions. Incidentally, since the cost of manufacturing, in bulk, a life-saving dose of such antibiotics is in the range of five cents by current fermentation process to 25 cents for new organic or new synthesized penicillins, the higher manufacturing cost of these new organic chemicals

On the Horizon

September 6-7, 1957 — 2d Alumni Officers' Conference, M.I.T. Campus in Cambridge.

December 7, 1957 — 11th M.I.T. Alumni Regional Conference, Pittsburgh, Pa.

is small compared to cost of distribution and need not be a significant deterrent to their use.

Final speaker of the evening was Morris Cohen, '33, Professor of Physical Metallurgy, who spoke on "A Glimpse at Modern Metallurgy." Professor Cohen reminded his audience that out of the remarkable developments of gas turbines, jet engines, and nuclear reactors has come a new technological bottleneck. An important need to be fulfilled in achieving additional progress is to determine how and where new materials, capable of withstanding extreme conditions of stress, temperature, corrosion, and ability to withstand nuclear radiation, can be developed. Opportunities in metallurgy and the demand for metallurgists have never been so great and varied as today.

There is a growing awareness throughout the leading nations of the world that handbook information on conventional materials is no longer adequate for the needs of modern technology. To meet this challenge, metallurgists are probing more deeply into the basic nature of metals and are boldly developing new alloys from substances that were only curiosities in the periodic system a decade ago. Metallurgy today is closely related to physics, chemistry, mechanical engineering, and chemical engineering.

There has been an accelerating trend toward higher operating temperatures. In the generation of steam power, for example, during the past 50 years the operating temperature has increased from about 500 degrees F. to 1,050 degrees F. This has been made possible by improvements in steel through alloying molybdenum and other metals. Steam pressures have increased accordingly. In 1940 gas turbines and jet engines operated at temperatures of 1,200 degrees F. In 1956 operating temperatures were about 1,550 degrees F. with far greater thrust as a result.

Fracture due to brittleness is another one of the problems to which the metallurgist devotes much effort. During World War II some welded tankers and freighters actually broke in two and at least 1,000 underwent a major failure of some sort because of brittleness and fatigue.

Theoretically, one should readily obtain steels with a tensile strength of 1,000,000 pounds per square inch. Because of the presence of impurities and irregular crystal structure, actual metals usually yield strengths of about one per cent of their theoretical value. Dr. Cohen described briefly some of the reasons for this discrepancy and described how pure whiskers or filaments 10^{-4} centimeter diameter will exhibit tensile strength of 500,000 pounds per square inch — or within a factor of two of the theoretical value.

Following an extended question period the meeting was adjourned at 9:30 P.M.

Individuals Noteworthy

■ Prominent in the news since The Review's last issue have been the 30 Alumni promotions, elections, or appointments enumerated below:

Homer N. Calver, '14, as Visiting Professor in Public Health, American University of Beirut, Lebanon . . . *Elmer E. Dawson, Jr.*, '14, as a Director, Compo Shoe Machinery Company;

Everett S. Coldwell, '15, as Chairman of Ford, Bacon, and Davis . . . *Marshall B. Dalton*, '15, and *Hovey T. Freeman*, '16, respectively, as a Director and the Secretary of the National Fire Protection Association;

Willard C. Brown, '16, and *Roscoe H. Smith*, '23, respectively, as President and First Vice-president of the Cleveland Engineering Society . . . *Timothy E. Shea*, '19, as Vice-president, Engineering, Western Electric Company;

J. Rowland Hotchkin, '21, as a Director, United-Carr Fastener Company . . . *Francis J. Magee*, '21, as Assistant Chief Engineer for Construction and Design, Mass. Department of Public Works;

Charles W. Maloney, '21, as Chief Electrical Engineer, Stone and Webster Engineering Corporation . . . *John J. Cychol*, '22, as Chief Engineer of the 5th District, Illinois, Division of Highways;

James F. Crist, '24, as President, Southern Electric Generating Company . . . *Dean E. Hutchisson*, '24, as Director of the American Institute of Physics;

James A. Drain, Jr., '26, as Vice-president, Mining and Construction Division, Joy Manufacturing Company . . . *Philip W. Robinson*, '26, as Plant Superintendent, Latchford-Marble Glass Company, Los Angeles;

Brigadier-General Ernest K. Warburton, '26, as Commanding General of the Operational Test Center, Eglin Air Force Base, Florida . . . *Fermo A. Bianchi*, '27, as President, New England Road Builders' Association;

Howard A. Chinn, '27, as Chief Engineer, CBS-TV . . . *Royal Weller*, '27, as Vice-president in charge of engineering, Stromberg-Carlson Division, General Dynamics Corporation . . . *Donald W. Fettes*, '32, as President, Gerhardt F. Meyne Company, Chicago;

Samuel A. Groves, '34, as President, United-Carr Fastener Corporation . . . *James H. Kimberly*, '34, as President, International Cellucotton Products Company, Chicago . . . *Lawrence C. Hall*, '35, as Vice-president of the New Hampshire and Granite State Fire Insurance Companies.

George E. Valley, Jr., '35, as Chief Scientist, U.S. Air Force, succeeding *Courtland D. Perkins*, '41 . . . *Norman T. Robey*, '36, as Assistant Manager, Whiting Refinery, Standard Oil Company of Indiana . . . *Gouq-Jen Su*, '37, as Professor of Chemical Engineering, University of Rochester;

Richard T. Orth, '40, as Vice-president and General Manager, Electronic Tube Division, Westinghouse Electric Corporation . . . *David R. Herwitz*, '46, as Professor of Law, Harvard Law School . . . *Phillip H. Smith*, '52, as Director of Purchases, La Salle Steel Company, Chicago.

■ Special honors recently announced or awarded to Alumni and members of the Faculty included:

To *Jerome C. Hunsaker*, '12, its Gold Medal, by the Royal Aeronautical Society of Great Britain . . . to *George A. Richter*, '13, an honorary doctorate of technology, by the University of Göteborg, Sweden;

To *Howard L. King*, '15, named "Metropolitan Civil Engineer of the Year," by the Metropolitan Section of the American Society of Civil Engineers . . . to *Joseph W. Barker*, '16, an honorary doctorate of engineering, by Rose Polytechnic Institute . . . to *Lawrence H. Flett*, '18, honorary life membership, by the American Institute of Chemists;

To *James R. Killian, Jr.*, '26, decorated as an Officer of the Legion of Honor, by France; and its Public Welfare Medal, by the National Academy of Sciences . . . to *Louise Hall*, '30, the Founders Fellowship Award, by the American Association of University Women;

To *Harry M. Krutter*, '32, the Distinguished Civilian Service Award, by the United States Secretary of Defense . . . to *Chandler Wentworth*, '35, a "major award" in the 1957 Design Competition, sponsored by *Materials and Methods* magazine . . . to *Walter S. Pierce*, '47, First Award in the "Homes for Better Living" contest, sponsored by the American Institute of Architects, *House and Home*, *Better Homes and Gardens*, and National Broadcasting Company;

To Professors *Charles S. Draper*, '26, of Aeronautical Engineering; *John C. Sheehan*, of Organic Chemistry; and *Jerrold R. Zacharias*, of Physics, election to membership in the National Academy of Sciences.

■ Kudos came to 14 Alumni last May upon the occasion of its 100th anniversary celebration in Washington by the American Institute of Architects. As previously announced in The Review (March, 1957, page 244), *Ralph T. Walker*, '11, and *Louis H. Skidmore*, '23, respectively, received the Centennial Gold Medal and the annually awarded Gold Medal.

Of the 48 named for 1957 to the College of Fellows, a body composed of less than 4 per cent of the Institute's total membership of over 11,000, five were Alumni, namely: *B. Sumner Gruzen*, '26, *Joseph D. Murphy*, '29, *Fred L. Markham*, '30, *Benjamin L. Smith*, '30, and *Thomas K. FitzPatrick*, '32.

From 344 "submissions" for judgment at the centennial celebration, six were chosen to receive "First Honor Awards," and 14 others to receive "Awards of Merit."

Of the six "First Honor Awards," two were shared by *Herbert L. Beckwith*, '26, *Lawrence B. Anderson*, '30, *William E. Haible*, '39, and *William W. Caudill*, '47.

Of the 14 "Awards of Merit," three were shared by *Edward A. Merrill*, '22, *Walter T. Rolfe*, '23, *Louis H. Skidmore*, '23, *Albert S. Goleman*, '25, and *William W. Caudill*, '47.

■ Among the Alumni to whom birthday congratulations are appropriate during the summer are seven due to celebrate 90th anniversaries, and 19 their 80th, as listed below with dates of birth:

July, 1867 — *Charles G. Trefethen*, '88, on the 4th; *Albert C. Smith*, '96, on the 22d; and *Ralph Sweetland*, '88, on the 28th;

August, 1867 — Charles G. Merrell, '88, on the 2d; and Frank E. Newman, '92, on the 13th;

September, 1867 — Miss Lucy Walker, '89, on the 1st; and J. Vaughan Dennett, '93, on the 27th;

July, 1877 — Edward E. Albee, '99, on the 8th; Harry M. Thayer, '00, on the 10th; George H. Archibald, '00, on the 22d; M. DeKay Thompson, '98, and John W. Brown, '00, on the 23d;

August, 1877 — Miles S. Sherrill, '99, on the 2d; Arthur F. Brewer, '99, on the 7th; George T. Cottle, '98, and C. Gardner Barry, '99, on the 10th; Kenneth M. Blake, '99, on the 13th; Mrs. Marion L. Woodman, '00, on the 15th; Charles E. Smith, '00, on the 20th; and Kenneth Seaver, '00, on the 26th;

September, 1877 — Robert S. Blair, '00, on the 1st; Charles H. Hughes, '00, on the 3d; James G. MacDonald, '00, on the 7th; Francis C. Lincoln, '00, on the 8th; Mrs. Helen M. Hill, '99, on the 18th; and Edgar P. Trask, '99, on the 28th.

With these 26, the rolls of the Alumni Association will include a total of 59 living nonagenarians and 598 octogenarians.

Visiting Committee Report on Chemical Engineering

■ All members of the Visiting Committee on the Department of Chemical Engineering, except Bradley Dewey, '09, and David W. Harris, met with C. Richard Soderberg, '20, Dean of the School of Engineering, Robert M. Kimball, '33, Secretary of the Institute, and members of the Faculty of Course X on May 14, 1956.* Mimeographed material had been distributed to members of the Committee in advance, so that members could proceed directly to a discussion of pertinent issues.

A wide range of topics was discussed by the Visiting Committee under the general headings of Department Status, Nuclear Engineering, and General Policy. The details of the Committee's examination are too long to be given here, even in condensed form. However, the summary of the Executive Session of this Committee's deliberations will indicate the general areas examined and will also indicate the recommendations which the Committee made.

The Committee notes with satisfaction the improvements made at M.I.T. during the year in staff salaries and pension benefits. It regards it as urgently necessary to continue the efforts to increase the incentive for outstanding scientists and engineers to remain in teaching.

It is realized that during the coming years M.I.T. will face strong pressures for expansion both on the undergraduate and graduate levels. The Committee urges that, in approaching this problem, M.I.T. keep in mind that it can serve the nation most effectively by maintaining its high standards, and realizes that rigid plans in this respect cannot be made for long periods ahead.

Because of the increased complexity and changed emphasis of the chemical engineering field, the Com-

* Members of this Committee for 1955-1956 were: Charles A. Thomas, '24, chairman, Bradley Dewey, '09, Fred C. Koch, '22, William S. Brackett, '23, Marion W. Boyer, '25, Clarence L. A. Wynd, '27, Robert Cairns, David W. Harris, and Henry D. Smyth.

mittee recommends that the Institute's Department of Chemical Engineering plan for increased activity at the doctoral level but retain its emphasis on the M.S. degree. This will require an increase in the Department's research program, as well as an increase in the available fellowships for graduate students.

The Committee notes with interest the increased attention now given to the problem of automatic control for chemical engineering plants. It urges that the Department seize the initiative in this problem in co-operation with other departments which can provide specialized assistance.

The Committee recommends that the Department give careful attention to its role in applied science in relation to chemical engineering. The Department's leadership in the past must be maintained, but modern conditions require that it be broadened to include physical, as well as chemical, phases of applied science.

In view of the satisfactory status of the Department, as a whole, the Visiting Committee recommends that, the major effort for future meetings be devoted to detailed and searching discussions of specific problems which call for study. The specific problems which the Committee has in mind at the present time are: (a) the Program of Undergraduate Teaching in Chemical Engineering; (b) the Program of Applied Chemistry and Physics in Chemical Engineering; (c) the Role of Creative Thinking in Chemical Engineering; (d) the Departmental Structure in Engineering at M.I.T.

The Department may have other topics which it might wish to add to this list. In order to make the discussion as effective as possible, the Committee recommends that the major points of the issues selected for the next meeting be brought out in a short report in advance of the meeting, the report to be used as a guide for the discussion.

After review by the Institute's Executive Committee in August, and by the Corporation on October 1, 1956, the report of the Visiting Committee was submitted for publication in *The Review* on October 25, 1956.



David L. Eynon

At 60th anniversary celebration of M.I.T. Club of Philadelphia at Longwood Gardens, estate of the late Pierre S. du Pont, '90, Samuel K. McCauley, '41, President, presents honorary life membership to Greville Haslam, '15, as David A. Shepard, '26, Theodore T. Miller, '22, and Herbert R. Moody, '41 (left to right), approve.

Twenty-five Years Ago This Month . . .

■ On July 1, 1932, Bradley Dewey, '09, President of the Dewey and Almy Chemical Company, retired as the 38th President of the Alumni Association, being succeeded in that office by Allan Winter Rowe, '01, Chief of Research Service of the Evans Memorial of the Massachusetts Memorial Hospitals. Other retiring officers of the Dewey Administration of 1931-1932 were: Donald G. Robbins, '07, as Vice-president; Henry E. Worcester, '97, and Raymond Stevens, '17, as members of the Executive Committee. Their respective successors in the Rowe Administration of 1932-1933 became: Harrison P. Eddy, Jr., '17, C. Adrian Sawyer, Jr., '02, and Marshall B. Dalton, '15.

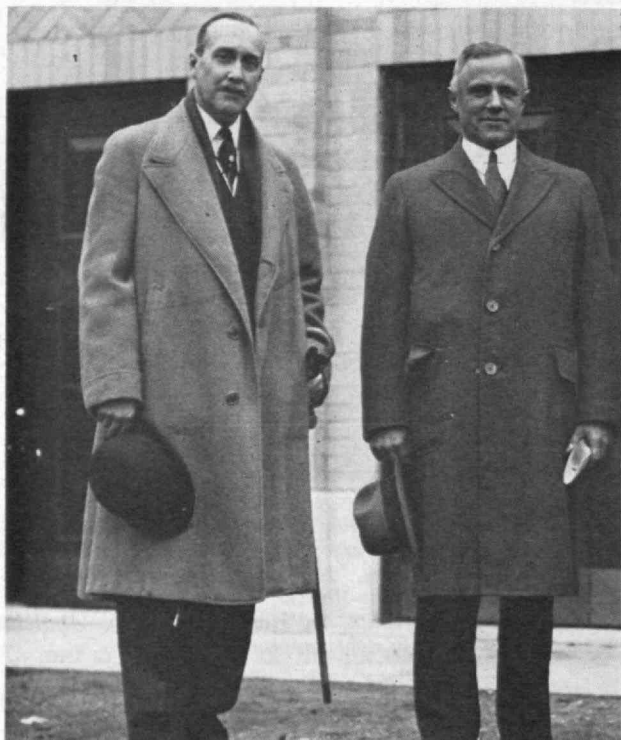
[Five of the above-mentioned subsequently served as Presidents of the Alumni Association, namely: Robbins, 43d President in 1936-1937; Dalton, 44th in 1937-1938; Worcester, 47th in 1940-1941; Stevens, 51st in 1944-1945; and Sawyer, 56th in 1949-1950.]

. . . William Z. Ripley, '90, Elisha Lee, '92, and Roger W. Babson, '98, retired as Alumni Term Members of the Institute Corporation, being succeeded by Bradley Dewey, '09, M. Herbert Eisenhart, '07, and Jerome C. Hunsaker, '12.

[Later, Mr. Dewey was elected a Life Member of the Corporation from which body Dr. Hunsaker resigned his Term Membership to become a member of the Faculty and Head of the Departments of Mechanical Engineering (1933-1947) and Aeronautical Engineering (1933-1952).]

. . . Faculty retirements for the year ending June 30, 1932, were: Professors Frank A. Laws, '89, of Electrical Measurements; Arthur G. Robbins, '86, of Topographical Engineering; and Robert H. Smith of Machine Construction; and Assistant Professor James R. Lambirth of Mechanical Engineering.

Allan Winter Rowe, '01, and Karl Taylor Compton



Visiting Committee Report on Electrical Engineering

■ The Visiting Committee on the Department of Electrical Engineering* met on October 1 and 2, 1956, with the following members present: Max I. Alimansky, '28, George W. Gilman, '23, William R. Hewlett, '36, Theodore V. Houser, Emanuel R. Piore, H. B. Richmond, '14, Robert C. Sprague, '23, chairman, and Dean E. Wooldridge. Alexander C. Monteith was unable to attend the meeting.

Representing the Administration were: James R. Killian, Jr., '26, President; J. A. Stratton, '23, Chancellor; C. Richard Soderberg, '20, and H. Guyford Stever, Dean and Associate Dean, respectively, of the School of Engineering.

The Committee was joined in its discussions, except for the executive session, by senior members of the Faculty. The Committee came to the following conclusions on the several major issues presented for discussion.

(1) The Committee visited selected departmental laboratories in which graduate and Faculty research is conducted, and was much pleased with the presentation on the graduate research activities in the Department and with the breadth and depth of the work that is being undertaken.

(2) The Committee was enormously impressed with the progress which has already been made in the revision of the undergraduate curriculum and endorses the plans of the Department for the further contemplated changes.

(3) The Committee enthusiastically endorses the Department's proposal to investigate the most appropriate way of instituting a Course VI-B program aimed at a more effective integration of graduate study with undergraduate study.

(4) The Committee is sympathetic to the desire of the Institute's Administration to co-operate with local industry by providing opportunity for further professional education of young scientists and engineers on the staffs of industrial companies. The Institute must keep in mind that its basic responsibility is at the national level; hence, it is conceivable that its program would deviate from that which some local industrial interests would prefer at the present time. The Committee has the conviction that the Institute's first responsibility is to maintain the highest attainable standards in its educational program and that the decisions with regard to any co-operation with industry in this matter should rest with the Institute.

(5) The Committee reviewed enrollment statistics and found that 48 per cent of the total freshman class indicates a desire to enroll in either Physics or Electrical Engineering. Also, 42 per cent of the sophomore class is enrolled in these two Departments. In recent years, enrollment in Electrical Engineering has moved from 17½ per cent to 22 per cent of the total M.I.T. enrollment. Of more significance is the fact that the percentage increase has

*Members of this Committee for 1956-1957 are: Robert C. Sprague, '23, chairman, H. B. Richmond, '14, George W. Gilman, '23, Max I. Alimansky, '28, William R. Hewlett, '36, Theodore V. Houser, Alexander C. Monteith, Emanuel R. Piore, and Dean E. Wooldridge.

Class of 1916 Dinner

Members of the Class of 1916 held an informal dinner at the Hotel Chatham in New York City on May 1. Left to right, at far side of table are: Herbert Mendelson, Arthur Caldwell, George Petit, William Barrett, James Evans, Gilbert Gauss, Richard Berger and Class President Ralph Fletcher. At head table, left to right, are: Harold Whitney, Thomas D'A. Brophy, David Patten, Walter Binger, and Marshall Wellington. At right-hand side of table, far to near, are: Harry Smith, Francis Stern, Harold Dodge, Leonard Stone, Ping Yok Loo, Harvey Stocking, Isidore Richmond, Richard Rowlett, Joseph W. Barker, and John Woods. Although the dinner was planned primarily for members in the Greater New York Area, a few from the Boston area were present.



F. S. Lincoln, '22

been considerably higher in the second, third, and fourth years, while the number of graduate students in the Department has been held substantially constant. Concurrent with the above, the so-called service load of the Department has not decreased.

The Committee would be reluctant to see an arbitrary ceiling placed on the registration in Electrical Engineering without having some reliable prognosis of need for electrical engineers—specifically of the M.I.T. type—five or 10 years hence. It believes that there were sound grounds for the belief that the future needs for scientists and engineer-scientists should increase rather than decrease. It was unanimous in its belief that to the maximum degree the student, once admitted, should have free choice of his major department. The Committee understands that the total undergraduate en-

rollment at the Institute will remain approximately constant, although some increase in the size of the graduate school is expected and should even be encouraged for the Department of Electrical Engineering.

At the end of the meeting the Visiting Committee congratulated Professor Gordon S. Brown, '31, Head of the Department, and his entire staff for the great advance in educating electrical engineers which had been conceived and initiated by his Department in the last several years, and as represented by the present courses of study in the Department.

The report of the Visiting Committee was approved for publication in *The Review* at the meeting of the Executive Committee of the Institute on April 5, and was received by *The Review* Office on May 8, 1957.

Harry J. Carlson: 1869–1957

■ Harry J. Carlson, emeritus life member of the Corporation, died at Brooks Hospital, Brookline, on June 16. He was 87 years old.

A prominent Boston architect, Mr. Carlson was partner in the contracting firm of Coolidge and Carlson from 1903 until his retirement in 1950. His work included the design of many college and office buildings, churches, and residences. He was elected a life member of the M.I.T. Corporation in 1921, and in 1953 became life member emeritus.

Born in St. Paul, Minnesota, Mr. Carlson attended M.I.T. with the Class of 1892 and then studied at Atelier Duray, Paris. After working with W. S. Sampson and Company, contractors, he established an independent architectural practice before the turn of the century. He had also been a lecturer on architecture at Massachusetts Normal Art School and, when M.I.T. was still in Boston, was one of President MacLaurin's three architectural advisers on a location for the new M.I.T. buildings. Bates College awarded him an honorary master of arts degree in 1928.

Mr. Carlson was a trustee of the Newton Savings Bank, past president of M.I.T.'s Alumni Association,

life trustee emeritus of Bates College and member of its board of overseers and finance committee, and fellow of the American Institute of Architects. He had also been an active leader in the Boston Society of Architects, Boston Chamber of Commerce, Boston section of the American Academy in Rome, Massachusetts Library Aid Association, and International Y.M.C.A. Formerly a member of the board of visitors of the Harvard School of Architecture and an architectural adviser to the Massachusetts State Library Commission, he was a member of the Neighbors Club, Newton Centre, and University Club.

Always active in M.I.T. Alumni activities, Mr. Carlson was president of the Association for 1922-23, and served on numerous Alumni committees throughout the years.

Mr. Carlson was in charge of design and construction of the west wing of the dormitory quadrangle directly behind Walker Memorial Building and in the same year, 1930, the firm of Coolidge and Carlson designed the new main physics building at the Institute. In 1937, Mr. Carlson was supervising architect representing Welles Bosworth, '89, for the new School of Architecture Building on Massachusetts Avenue, Cambridge.

Inertial Guidance Disclosed

■ Details of a new jam-proof form of navigation for airplanes, missiles, and ships developed at M.I.T. were disclosed at a press conference on April 18 by Charles S. Draper, '26, Head of the Department of Aeronautical Engineering.

Without magnetic compass, radio, radar, or a glimpse of the earth, the sun, or stars, the "inertial guidance" system promises to make it possible to pilot any craft to any spot on earth. It will certainly be of very great importance as a part of any system for navigation through space — to the moon or Mars — if such trips become feasible. It has been described as "astronomy in a closet," by Walter Wrigley, '34, Professor of Aeronautical Engineering, who spoke on inertial guidance navigation before the Alumni Council at its meeting on May 28, 1956.

The system cannot be jammed by enemy electronics. Natural phenomena, such as weather, sunspots, and magnetic influences in polar flights do not interfere with it.

The heart of such a system is the gyroscope, which is being applied to flight control and fire control as well as to navigation. Military application for all three uses has been developed largely by the Instrumentation Laboratory, which has been operated by M.I.T. since 1939 under contracts with the Air Force and Navy.

Professor Draper, Director of the Instrumentation Laboratory, and Professor Wrigley, Educational Director in the Instrumentation Laboratory, have been largely responsible for the development of inertial guidance.

Sir Isaac Newton's laws of motion describe physical phenomena as seen by an observer standing in space and able to see the earth rotating. It is sometimes said that any space that is unaccelerated relative to the "fixed stars" is an inertial space. The "earth space," fixed to our world, is not inertial space because of the earth's rotation. The rotation of the earth is too slow to cause earth space to be detected as different from inertial space, except for measurements made with highly precise instruments. This small but detectable difference, however, makes inertial guidance possible. Forces that depend on changes of motion with respect to this special inertial space can be measured by self-contained equipment.

A spinning gyroscope resists any movement to change the plane in which it is spinning, and can be designed and built to be so free from disturbances that it continues to point along the same direction in inertial space regardless of the direction in which it is carried by the earth, an airplane, a missile, or a ship. When the direction of the craft is changed, the direction of the spin axis of the gyroscope "stays behind" so that it can be used to give information concerning the change in direction of the craft.

Another instrument that is essential to inertial navigation is a device which will always point "down" — toward the center of the earth. An ordinary pendulum would do this on a stationary platform, but on a moving craft that is undergoing any acceleration it would appear to swing backward because of its inertia when the airplane was given a forward accelera-

tion. Therefore, a special kind of device had to be developed which (as far as this simplified explanation is concerned) always points "down," regardless of an airplane's acceleration. The Instrumentation Laboratory developed such a device, known as a Schuler-tuned pendulum, based on a principle first proposed by M. Schuler of Germany more than 30 years ago.

Inertial navigation is thus made possible by combining two instruments — the gyroscope which holds information on the direction in inertial space of the vertical that existed at the point of departure and a pendulum-type device which shows the vertical that exists at any point at which an airplane is located during its flight. By using a clock to correct for the rotation of the earth and measuring the angle between these two verticals, the latitude and longitude of an airplane may be determined. The inertial guidance system not only determines this position continuously as the airplane proceeds but does it automatically and, in fact, directs the craft to its destination. The mechanism that accomplishes this is, of course, far more complex than a summary of its elements indicates.

The inertial guidance system resulted from research begun in 1939 by Dr. Draper. He headed a research group at M.I.T. which developed the Mark XIV Gunsight under the sponsorship of the Sperry Gyroscope Company and the U.S. Navy Bureau of Ordnance. In the first battle experience after it was installed on the U.S.S. *South Dakota* and destroyers, 32 Japanese attacking aircraft were shot down — a remarkable record. It was adapted for use with other naval and anti-aircraft guns.

The Instrumentation Laboratory at M.I.T. is under the administrative control of Admiral Edward L. Cochrane, '20, Vice-president for Industrial and Governmental Relations. The Division of Sponsored Research, which F. Leroy Foster, '25, directs, administers contracts with the armed services under which these developments have been accomplished.

At the present time the laboratory has a staff of 700 working in laboratories in Cambridge and a flight facility at Hanscom Field at Bedford, Mass.

Roger B. Woodbury, '48, and Forrest E. Houston, '48, Associate Directors, have been responsible for technical direction of inertial systems engineering, which has been accomplished by groups under the leadership of Joseph E. DeLisle and John W. Hursh, Assistant Directors. Many important developments of gyroscopic components have been carried out by laboratory sections headed by William G. Denhard, '42, and Lester R. Grohe, '54.

The Instrumentation Laboratory not only has been responsible for the development of gyroscopic instruments but is an educational branch of M.I.T., conducting courses in weapons systems for graduate students under the general supervision of Professor Wrigley. There are now 60 officers and civilians enrolled in the courses, most of them working for master's degrees although some are doing doctoral work in instrumentation.

The work of the laboratory on front-line engineering problems provides a unique environment for undergraduate and graduate students in aeronautical and instrumentation engineering.

Visiting Committee Report on Libraries

■ The Visiting Committee on Libraries met on May 12, 1956, with the following members present: John A. Lunn, '17, chairman, John W. Barriger, 3d, '21, Verner W. Clapp, Herman H. Henkle, and Edwin D. Ryer, '20.* In addition, Julius A. Stratton, '23, Chancellor; Professor Philip M. Morse, Director of the Computation Center; Professor William N. Locke, Director of Libraries; and Robert M. Kimball, '33, Secretary of the Institute, met with the Committee, as representatives of the Institute's Administration.

The chairman reported briefly on the resignation of Vernon D. Tate as Director of Libraries and the appointment of Professor Locke as Director. Mr. Lunn explained that in view of the impending change in administration, the Library Committee did not meet in 1955.

Professor Locke described the present organization of the Library resulting from the implementation of the Metcalf Report of two years ago. The reduction from nine branch libraries to five divisional libraries is in full effect and appears to be working out well with considerable economies of operation. There appears to be a sentiment among some of the Faculty that the consolidation is causing them real inconvenience and that a good case can be made for the educational advantages of creating one or more new branch libraries. The Committee expressed the feeling that the library administration should continue to review the special needs of individual departments and groups but at the same time expressed the hope that the advantages of a consolidated library would be maintained, especially in the use of stacks in the Central Library for shelving of less used portions of collections related to divisional or branch libraries.

Professor Locke introduced the following librarians and heads of departments who reviewed the activities in their respective areas.

Librarians: Miss Barbara Klingenhagen, Dewey Library; Ralph R. McNay, Engineering Library; Burton A. Robie, Humanities Library; Miss Caroline Shillaber, Rotch Library; Miss Marguerite Chamberlain, Science Library.

Department Heads: Miss Eleanor Cauty, Acquisitions Department; Miss Hildegard Ziegler, Catalogue Department; Miss Louise Trainor, Circulation Department; Peter Scott, Microreproduction Service; Miss Gertrude Perry, Periodicals and Binding; Miss Natalie N. Nicholson, Reference Department; Miss Eleanor L. Bartlett, Special Collections.

The Committee reviewed the several recommendations made by the Visiting Committees in the last five years and noted with pleasure that many of the earlier recommendations had already been put into effect. For example, the following represent significant developments: the implementation of the Metcalf Report referred to above; a thorough review of the salary scale of the professional staff in the library

system, with resulting increases in recent years; the several physical changes, particularly in the Engineering and Humanities Libraries. Funds have been allocated for doing the remaining work in the Engineering and Humanities Libraries in the summer of 1956 as well as for the relighting of the Rotch Library.

Many of the department heads referred to the need for additional professional staff and for larger book acquisition budgets. There was agreement among the library department heads that a definitive policy should be devised for the acquisition of new books and periodicals, whether by purchase or by gift. The Visiting Committee agreed with these recommendations but recognized that first consideration was quite properly given to the question of the salary structure. Significant steps in this direction have already been taken. The Committee also considered the question of establishing an industrial reference service, concluding that it would not be wise at the present time to try to institute such a service but that the question should be reviewed again at a later time.

The Committee specifically recommended that the Director of Libraries work toward the following objectives:

1. It appears desirable for some professional staff members to be available evenings and week ends in the libraries. Currently, the libraries are manned entirely by graduate students, after working hours.

2. Reduction of book losses is desirable. Some plans have already been formulated and approved for meeting this objective but it may be necessary to take further steps. The Committee expressed the view that the element of public relations, in making the situation known to students and Faculty, is most important, in order to get maximum voluntary cooperation.

3. Up-to-date booklets should be prepared describing the services available in each of the major libraries, plus perhaps a booklet for the system as a whole. It is suggested that such a pamphlet include information for students on how best to use the libraries' services.

4. Use available operations research techniques to determine the relative cost of microfilming some publications (such as theses) versus binding and keeping the original documents directly available in the library.

5. Continue to explore the opportunity to use cooperative indexing services and continue co-operating with other major libraries in the metropolitan area, such as Harvard.

6. Devise a system which will eliminate duplication of effort and excessive correspondence in connection with the payment of bills for new books.

7. Consider further the opportunities to mechanize the production of catalogue cards.

8. Take the lead among scientific libraries in making available Russian technical literature. This program is now under way through the National Science Foundation and other interested groups.

The report of the Visiting Committee was reviewed by the Institute's Corporation on June 8 and by the Executive Committee in August, 1956.

*Members of this Committee for 1955-1956 were: John A. Lunn, '17, chairman, Luis deFlores, '11, Edwin D. Ryer, '20, John W. Barriger, 3d, '21, Charles A. Stokes, '40, Verner W. Clapp, William Emerson, Herman H. Henkle, and Keyes D. Metcalf.

Visiting Committee Report on Meteorology

■ The Visiting Committee on the Department of Meteorology* met on Saturday, December 1, 1956, at the Institute. The members of the Committee present at this meeting were: Horace R. Byers, '32, Laurence B. Davis, '22, Thomas S. Moorman, Jr., Harlow Shapley, David B. Smith, '33, and Theodore T. Miller, '22, chairman. Also in attendance were: George R. Harrison and Francis Bitter, Dean and Associate Dean, respectively, of the School of Science; Robert M. Kimball, '33, Secretary of the Institute; and the Faculty members of the Department.

From the discussions at the meeting it is apparent that meteorology is evolving from an observational art to a true science. Two developments have contributed in an important way to this significant trend. A reasonably adequate mass of daily observational data from the upper atmosphere over the Northern Hemisphere has provided the basis for a description of the actual operations of the atmosphere. The development of the high-speed digital computer has made it possible to solve in a straightforward manner the basic equations that describe the motions of the atmosphere. For the first time meteorological scientists have the tools to surmount the hitherto almost insuperable barriers imposed by the mathematical intractability of the problem and the sheer bulk of the data involved. To take full advantage of these challenging opportunities the Department has assembled what is undoubtedly one of the strongest theoretical teams anywhere in the world. M.I.T. now is in a position to make fundamental contributions to the scientific bases for improving the accuracy and range of weather prediction, and even to commence to speculate on the future possibility of large-scale weather modification.

In the fall of 1956, an *ad hoc* committee, appointed by J. A. Stratton, '23, Chancellor, consisting of the Department Head and two Faculty members from each of the two Departments—Meteorology and Geology and Geophysics—formulated the future goals of M.I.T. in the earth sciences. The interim report of this *ad hoc* committee was carefully studied by the Visiting Committee, which enthusiastically endorses the proposal that M.I.T. should play a leading role in the integration and development of the major earth sciences. In the Departments of Meteorology and of Geology and Geophysics, M.I.T. already has strong resources in the areas relating to the atmosphere and the solid earth. The Visiting Committee supports the proposal of the *ad hoc* committee that M.I.T. develop even closer co-operation with the Woods Hole Oceanographic Institution so that instruction and research in oceanography will become an integral part of the program.

The Visiting Committee unanimously endorsed the recommendation of the *ad hoc* committee that the Departments of Meteorology and of Geology and Geophysics should offer a series of courses, at the fourth- and fifth-year level, in classical physics

*Members of this Committee for 1956-1957 are: Theodore T. Miller, '22, chairman, Laurence B. Davis, '22, Horace R. Byers, '32, David B. Smith, '33, John J. Desmond, Jr., Joseph J. George, Thomas S. Moorman, Jr., Francis W. Reichelderfer, and Harlow Shapley.

against a background of the important geophysical problems in our environment.

The Committee unanimously endorsed the proposed establishment of an Interdepartmental Research Laboratory of Earth Science. The Laboratory would provide a place for experimentation in the dynamic aspects of earth science, facilitate the interplay of the several fields upon one another, and attract strong support for M.I.T. as one of the world's great research centers in the earth sciences.

The report of the Visiting Committee was approved for publication in The Review at the meeting of the Executive Committee of the Institute on April 5, and was received by The Review Office on May 8, 1957.

Visiting Committee Report on Mechanical Engineering

■ At the meeting of the Visiting Committee on the Department of Mechanical Engineering,* held on January 10, 1957, four important conclusions were reached as follows:

(1) The Committee believes that a broadening of the fundamental course in materials required of all undergraduates in Mechanical Engineering is desirable in principle, and recommends that the Department explore whether this can be accomplished without unduly harming other subjects.

(2) With respect to a possible new undergraduate option specializing in materials engineering, the Committee recognizes the potentiality of such specialization but believes the Department should consider carefully whether this can be accomplished at the undergraduate level without unduly diminishing the basic engineering content of the curriculum. The Committee believes this proposal is important enough to warrant consideration again by next year's Visiting Committee in the light of any curricular studies.

(3) With respect to the possibility of incorporating more textile technology in the required undergraduate course on materials, the Committee feels that consideration should be given to such possibility but that the criterion for inclusion should be whether such inclusion is desirable in order to improve the student's basic understanding of the mechanical behavior of materials. The Committee feels that the subject of textile fibers is too specialized to warrant its introduction into the undergraduate curriculum as a required course.

(4) The question of introducing a new degree in textile technology at the graduate level was not considered by the Committee because of inadequate time and because of inadequate background with respect to the scope of the Department's present activities and long-term aims in the graduate field.

The report of the Visiting Committee was approved for publication in The Review at the meeting of the Executive Committee of the Institute on April 5, and was received by The Review Office on May 8, 1957.

(Continued on page 526)

*Members of this Committee for 1956-1957 are: Walter J. Beadle, '17, chairman, Max L. Waterman, '13, Charles A. Chayne, '19, Herbert G. Fales, '20, John F. Hennessy, '24, John Lawrence, '32, Jess H. Davis, Leonard S. Hobbs, and Gwilym A. Price.

The Stream of Life

In a world of increasing complexity, knowledge of science is an essential that helps us achieve security of spirit.

BACCALAUREATE ADDRESS

by GEORGE R. HARRISON

THE story has been told of an aspiring young Buddhist who entered a monastery for many years of study, to seek the wisdom and humility needed to embark on the seven-fold path of illumination. He was given the most menial of tasks to perform, and as the years went by, his duties became ever more degrading. The cleaning of the monastery pigpen, which he had been required to do as a freshman, eventually seemed most attractive in comparison with his later tasks. Ultimately the indignities heaped upon him so depressed him that he decided to give up, and he went to the worthy abbot and announced that he must regretfully withdraw, as he could not stand such degradation. "Stand up, my son," the abbot said, "at last, after all these years, you have learned the dignity of the human spirit and have passed the final test. Here is your diploma."

While you are not to be subjected to any such great disillusionment today, this is a good chance to discuss the reasons for some of the experiences that you have been through in the past four years. When we come back to such exercises as these twenty or forty years after our own graduations, we are likely to feel that our college experiences are somewhat different in relative importance from what we felt them to be on graduation day. Nor am I now making so prosaic a comparison as of the relative values of course work and extra-curricular activities.

The term "commencement" is losing its original meaning. Until fairly recently it connoted the time when the individual emerged from a sheltered academic environment into life, when he usually became responsible for the steering of his own ship pretty much for the first time. Today more and more of the universities, and especially those "polarized around science," are being transformed from sequestered areas of contemplation and study into communities which share active responsibility for the achievement and maintenance of freedom in thought and action by all the inhabitants of the world. Since you arrived at M.I.T. you have been immersed ever more deeply into activity that bears on this directly, and the sharpness of the chill to be expected from a sudden plunge into professional life is much less than would have been true previously. No longer can we say with Alfred North Whitehead that you are now at "the moment when the adventure of thought meets the

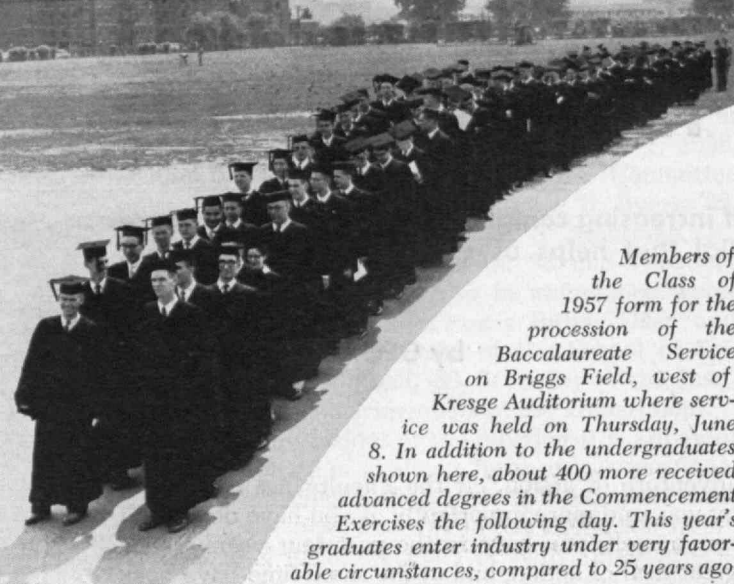
adventure of action." If the Faculty has done right by you, and more importantly, if you have done right by yourself, you have in the past four years seen a great deal of action, and at the same time have been immersed in a reasonable amount of thought.

Not so many years ago speakers on this baccalaureate platform were counselling new-fledged graduates that, although the world would probably not have jobs for all of them for some time, they should keep stiff upper lips and eventually something useful would be found for them to do; in the meantime they could rake leaves. The chief problem then was that of nutrition. How different it is today — yet we are likely to think our problems greater now, and vastly more fundamental. Yet, problems of one sort or another must always be with us, and their absence would, indeed, be a matter for concern.

We are often said to live in a time of special crisis. Ours has been called "a war-prone generation," "a generation bent on atomic destruction," "an era of guided missiles and misguided men." One hears warnings that this may be the "final hour" for choosing whether science is to be misappropriated for human folly and destruction, or embraced for salvation and a good way of life." If there ever could be such a single hour this might well be it, but life has always been, and is likely to continue to be, a perpetual succession of such hours. In our wave-train of existence, which out-Fouriers Fourier, the amplitude



Those taking speaking roles in the Baccalaureate Service of the Class of 1957 were Henry E. Salzhauer, Class President; James R. Killian, Jr., President, and George R. Harrison, Dean of Science.



Members of the Class of 1957 form for the procession of the Baccalaureate Service on Briggs Field, west of Kresge Auditorium where service was held on Thursday, June 8. In addition to the undergraduates shown here, about 400 more received advanced degrees in the Commencement Exercises the following day. This year's graduates enter industry under very favorable circumstances, compared to 25 years ago.

and the periodicity may vary greatly, but so long as there is life on earth the oscillations will continue, and in the long pull this is what makes men ever greater, more aware, and hence more alive.

In the Chinese languages new words are built up by an associative process of ideas which remains more specific in their written characters than in our own. The Chinese ideograph for "trouble" is two women under the same roof; that for "crisis" is made up of two symbols that stand respectively for "danger" and "opportunity." It is wise, of course, to stress the danger of the present crisis in world affairs, at least to the point where men are roused to doing those things which need to be done to avert danger, such as restraining governments from polluting the atmosphere unduly with radioactivity. We need, however, to give much more attention than we do to the vast new opportunities which now appear ahead, opportunities far greater and exciting than any ever seen by men before.

We are likely to be disconcerted by the present rapid shifting of social values. Young people especially are often unnecessarily disturbed by the counsels of those philosophers who, pre-occupied with the past few thousand short years of man's history, see humanity fighting a losing battle against a nature being made increasingly complex, and unnecessarily so, by man's own efforts. To get a proper perspective we need to supplement the information of human history, which still has an inordinately low signal-to-noise ratio because of the necessarily small time coverage of its measuring probes, with that supplied by the vast picture of the physical world now being made available by science, showing the splendid panorama of physical, mental, emotional, and spiritual evolution that has taken place during the past three billion years, and continues now at an ever-increasing rate.

As a physicist I have been interested in the absorption of light, not only over vast distances of space, but also through the aeons of time. When we look at our crowded highways and listen to our jangling telephones, the Golden Ages of Greece and Rome look very attractive, and it is easy to long for the simple life, and to point out that increased complexity does not necessarily mean progress. We have

much to learn from classical studies, to be sure, but life in ancient Greece is gilded by the sunset on its hills; those years are golden from our vantage point to some degree because of the absorption of blue and indigo tints by several thousand intervening years. The forces of change are indeed more active today, but the view that man, with his new atomic powers, may as a result of his eternal selfishness be wiping out his own future, neglects the basic stabilizing mechanisms that Providence has developed in her creatures over the slow course of evolution, and is providing plentifully in man.

The new radioactive dating systems, where by measuring the periods of stability of exploding atoms in various strata and fossils of earth one can determine with assurance the dates of appearance of first one organism and then another, bring a new clarity to the picture of how complexity tends to increase in nature under the influence of some innate urge in living matter. Slowed-up motion pictures of the opening of a rosebud or the sprouting of a grain of barley bring home to us the eagerness of life for new expression, and illustrate the dynamic rearrangement of patterns that nature is developing in increasing tempo.

It is an impressive picture that science is beginning to present, of a universe unfolding from simplicity to complexity, from disorder to increasing order, with new entities constantly emerging, each being tried and differentially preserved according to its success or failure in adapting to its environment or, in the higher stages of evolution, in adapting its environment to itself.

Over the three billion years or more that the earth has been capable of supporting life, increasing numbers of nucleons, the protons and neutrons and associated particles that are the building blocks of our material universe, have been able to swing into new patterns of order that form atoms, many of these atoms have been grouped into molecules, many of these molecules into cells, and increasing numbers of cells into multicellular plants and animals. When some of these creatures grew complex enough to develop nervous systems, sensation and awareness came into being. We see the development — up through the jellyfish first learning to sense vaguely with eyes that barely indicate the presence of the sun, up through the termite and the wasp with their few hundreds of nerve cells arranged to control automatically dozens of stimulated actions — of electrochemically controlled servomechanisms which became ever more complex, flexible, and adaptable. Long before man is reached in the evolutionary scale emotion and integrated response have been appearing, and with the coming of that great new electrochemical switchboard in the brain called the cerebrum, reason and imagination and spiritual aspiration came into being.

We may call the directing force behind all this the breath of life, or the hand of God, or energy affecting matter, as we wish; the fact remains that the bodies of all living creatures are composed of cells, and these of molecules, and these of atoms, and these in turn of nucleons, and regardless of our belief as to what goes on behind the scenes, the scenery is most impressive.

The improved cerebrum brought a new stage in the rearrangement of patterns to form entities of increased complexity, when it enabled man to begin designing on his own. We are likely to feel that the machines made by men are in some way basically different from and inferior to those developed slowly in nature over the ages. But we must not allow our belief in directive vital forces lying behind the veil of our present understanding to obscure the fact that birds fly and squirrels crack nuts with physical devices which are machines, and machines which operate with the same electrical, mechanical, and chemical forces that man now uses to operate his electric motors and his flying machines. We can see all about us that nature is still improving her collections of servos, and that creation, instead of occurring only once at the beginning of the universe, is going on at a constantly increasing rate, and takes place by a process to which man, himself a product of the same Creation, is now privileged to make great contributions.

When nature had brought man to the point where he could really take thought, through imagination and reason he was able to make machines which often are in some specialty of operation superior to any in nature. No animal has ever lived which could outpull a diesel locomotive, outfly a DC-7, outflutter a crystal oscillator, or outspeed an electronic computer in its handling of large numbers.

All this may be considered by some to be a very materialistic view of things, but I do not intend that it be so. Art and religion, as well as science, are broad and basic paths that man has cleared in his quest for truth, and each makes its own great contributions. Each also has its own limitations, as does science at the present stage of human thought and feeling, and needs the others as supplements. It is important, then, that without in any way neglecting or decrying the importance of any particular view of the universe, we do not fail to see the true meaning of the scientific picture.

It is especially dangerous today for a statesman to be ignorant of science, for servomechanisms exist not only in the material world of machines, and in the physical and chemical parts of the world of carrots, spiders, and of men, but in the economic and social and political and spiritual aspects of life as well. Many politicians who would never dare to try to reassemble something even so simple as an alarm clock tinker today with the operations of our national economy, and do not hesitate to recommend the removal of all sorts of gears and governors from the complex mechanisms of society.

One of the great developments of our day is the rapidly improving ability of human beings to understand and to manipulate numbers. Even though we may not readily understand what a billion is, we are coming to do as well with this magnitude as our parents did with millions, and as our forebears of a century ago did with thousands. Large numbers are by no means necessarily better than small ones, but if our understanding of complexity is to increase, our ability to evaluate things quantitatively must do so also. It is less than a thousand years since the number forty was far higher than most people could conceive of. Our literature still contains vestigial remnants of

this use of forty for any number too large to specify — we read of Ali Baba and the Forty Thieves, and that it rained for forty days and forty nights, or we speak of catching forty winks. I am not saying that the purpose of an education is to increase one's facility for rapid calculation; indeed, lightning calculators are usually not people of great intelligence. But the quantitative approach can contribute much to knowledge and thence to wisdom.

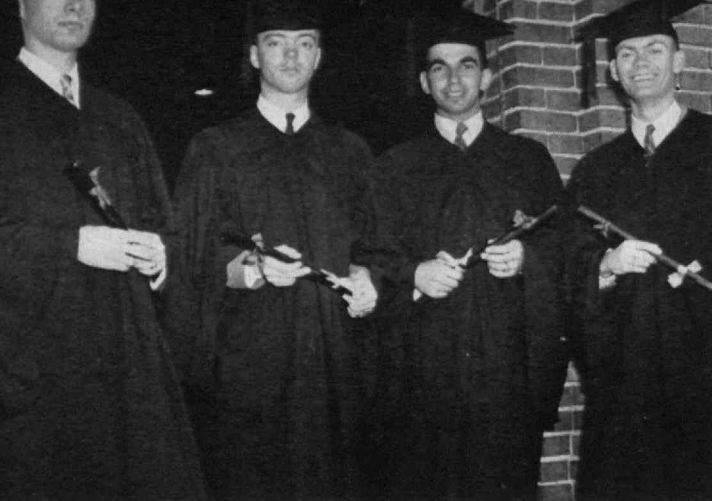
For this reason scientists and engineers are becoming increasingly preoccupied with computing machines. We recount with pride how they have replaced the pebbles and the abacus beads of antediluvian computing devices with the teeth of gear trains, then with vacuum tubes, then with the smaller and simpler transistors, and now perhaps with cryotrons and other devices. We are pleased that the giant Whirlwind computer was developed at M.I.T., and are proud that the new Compton Laboratory houses a far more complex and capable IBM 704. But what is even more important is that a good half of the 10 billion cells of the human brain consist of much smaller, more efficient, and in many ways more effective colloidal equivalents of the tubes, transistors, and other counting devices that our engineers now find so useful.

Brain Complexity and Awareness

Thousands of times more complex than the best man-made computer of today is the nervous system of any living vertebrate. In 500 million years nature has developed electrochemical calculators and signaling devices that occupy less than a gallon of space in the human body, weigh only a few pounds, and are able not only to count, but to write poems. It was partly to improve your ability to handle one of these computers, and to achieve better responsibility for its output, that you came to M.I.T.

By studying fossils and looking about us at the animal world we can see the slow improvements in complexity, sensitivity, and awareness that occurred as one breadboard model of the electrochemical nerve computer was replaced or supplemented by another. As the speed of transmission of their nerve signals increased, animals could become more complex. Signals in a clam travel along its nerves at only two feet a minute. In a crab they travel at some 600 feet a minute, in a frog at about 4,200, and in a human being at 24,000. Because a human body contains nerves which can carry impulses ten thousand times as fast as those of a clam, it has been able to develop a more active and much more complex brain. The human being that possesses it has far greater awareness than a clam or a crab or a frog, which means that we are much more alive than they. Complexity does not necessarily bring greater awareness, but it is needed before greater awareness can dawn.

All that we see or hear or feel or taste or smell, all that we are aware of, is brought to the brain by showers of sharp electric pulses, resulting from and transmitted by electrochemical changes, sent through a network of nerves from the sensory organs. In the million years that have passed since men became men, with elementary ability to reason, the human brain has suddenly doubled in size at least twice, and



Marshals at Commencement Exercises were Henry E. Salzhauser, President of Class of 1957, A. James Rowan, Vice-president, Allan M. May, Secretary-treasurer, and Fitzhugh L. Rawls, Jr., Senior Marshal.

each time has increased many thousandfold in complexity. Such rapid changes, the result of mutations, we find to be beyond the control of educational institutions.

Each of you when you came to M.I.T. brought with you the same number of brain cells that you had been provided with four months before you were born. You still have the same number, for while your brain has quadrupled in weight since you were minus one-third years old, your education has added not one cell to it. What has been changed is the size of the cells with age, and with education the ease with which groups of these cells can be connected one to another, so that new channels can be formed over which signals can flow, information can be stored and sorted and otherwise processed, and reason and emotional control and creative imagination can be developed.

Even after we have experienced a college education each of us has in the unused back rooms of our brains countless millions of circuits of the mind, which until aroused, stimulated by new associations, and correlated are likely never to be used at all in the processes of thought and feeling.

A baby ant has only a few hundred cells in its brain, and these are all hooked up in fairly permanent circuits, so that it can do almost everything it will ever do the minute it is hatched. Ants do many things which amaze us, but they need no Institutes of Technology. On the other hand, the ten billion cells of the human brain, with their flexible interconnections, make possible development of vast new areas of thought and feeling, which are as much beyond our present levels of reason and imagination as these are beyond the instinctual achievements of the spider and the ant.

New awareness often comes to us through new physical instrumentation. Astronomers have recently obtained inspiring glimpses into previously unplumbed depths of the universe by using microwaves. Perhaps nine out of every ten stars that might be visible to us are obscured by cosmic dust which absorbs the light waves on which we had previously been forced to depend to detect their presence. But microwaves, having longer wings than those of light,

are able to fight their way farther through the endless reaches of cosmic dust. With the development of radar during World War II new techniques were worked out for handling microwaves. Now we can "see" stars with microwaves that light waves have never revealed, and one important kind of astronomical blindness is being removed. Your years at the Institute have, we hope, helped to unlimber new reaches of the mind, new instrumentalities of awareness, new sensitivities, which can similarly bring into your ken new stars and abilities and dreams.

We are so fortunate as to have been born into a time when man is being given a chance to understand and control his environment much more basically than was ever possible before. Qualitatively, there were as great men in the world before the Industrial Revolution as there ever have been since. But quantitatively, in terms of numbers of people having greatness in imaginative achievement, as well as being possessed of the nobler virtues, man's ability to tap the energy of molecules has been fundamental. One twentieth of all the men who have ever lived still walk the earth today, and to them has now come the opportunity to control, not merely the molecular residues of atomic forces, but these greater forces themselves, with their million-fold larger energy content.

How ridiculous to believe that energy from the atom is man's master, while that from the sun is his servant! Atoms have been exploding since the beginning of time, and all the energy that has given the stimulus for life has come from the thermo-nuclear reactor that warms our solar system.

As a matter of fact, the genie of the atom is a benevolent, constructive, and very obedient genie, whose faults are merely those of his liberators. He is inherently no more evil than his brothers who control fire or electricity or the comforting radiance of the sun.

So you are wise not to shrink back in any way from the stream of life, but to plunge into it eagerly. Instead of yearning for perpetual bucolic simplicity which (as most men slightly past the age of retirement will tell you) is not really what we want after all, we must make ourselves increasing masters of complexity, and learn to take in our stride things that previously seemed difficult or impossible.

We need to learn to adapt to change. Instead of being children playing on a raft anchored in a smooth pond, in static equilibrium with their surroundings, men must learn to behave like the surfboard rider, or the water-skier, poised in dynamic equilibrium as he shifts his weight to meet the impacts of all buffeting waves that come. Meeting these impacts successfully is what brings greater awareness, aliveness, and the creative mastery that is at the back of human happiness.

Man has always lived among forces that could easily overwhelm him. The ability to see involves the courage to look. The cave man was frightened as thoroughly, and much more often, than we. Every living creature has always lived in a balance so delicate that a slight shift could terminate its existence in seconds. Yet the whole of human development has taken place under these circumstances.

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Equality and Excellence

As a means of achieving maximum development of human potentialities at every level of individual ability, a diversity of educational institutions is essential

EXCERPTS FROM COMMENCEMENT ADDRESS

by JOHN W. GARDNER

IN the years ahead those of you receiving degrees today are going to hear increasingly lively public discussion of higher education. As products of one of our greatest universities you will be presumed to have some views on the aims and consequences of higher education in America.

One of the most persistent questions you will encounter will be variously phrased: "Who should go to college?" "How shall we resolve the conflict between quality and quantity?" "How shall we serve the ideals of both equality and excellence?" As with so many other things, it will be far less important that you have pat answers than that you know how to think about the questions.

Even those who are deeply impressed — as I am — by the great positive achievements of American schools and colleges, over the past century, must agree that we have worried all too little about the individual of unusual talent or potentialities.

To make such an assertion, however, is not to deplore the unprecedented time and money we have devoted to the average youngster. Our kind of society demands the maximum development of individual potentialities at every level of ability; and it will serve no purpose to replace our neglect of the gifted by a neglect of the generality. We are all too prone to such wild swings of the pendulum in our national life. Martin Luther said that humanity was like a drunken peasant who is always ready to fall from his horse on one side or the other; and in that respect we Americans are all too human. We must learn to see the achievements and shortcomings of our educational system in some sort of embracing perspective which will permit us to repair one omission without creating others.

How can we foster excellence at the highest levels of ability and at the same time provide at all other levels constructive opportunities and rewards so that every level realizes its full potentialities, performs at its best, and harbors no resentment toward any other level? There is no single answer.

A part of any final answer would certainly be some revision of the altogether false emphasis which the American people are coming to place on college edu-

cation. This false emphasis is the source of great difficulties for us and can only be regarded as regrettable. Properly understood, the college or university is the instrument for one kind of further education of those whose capacities fit them for that kind of further education. It should not be regarded as the only passport to a meaningful life or the sole means of establishing one's human worth. And we have come perilously close to that. No wonder our colleges are crowded.

The crowding in our colleges is less regrettable than the confusion in our values. Human dignity and worth should only be assessed in terms of those qualities of mind and spirit which are within the reach of every human being. This is not to say that we should not value achievement. We should value it exceedingly. It is simply to say that achievement should not be confused with human worth.

The more we allow the impression to get abroad that only the college man or woman is worthy of respect in our society, the more we contribute to a fatal confusion which works to the injury of all concerned. If we permit the confusing assumption that college is the sole cradle of human dignity, need we be surprised that every citizen demands to be rocked in that cradle?

(Continued on page 546)



Participants in the Commencement exercises on June 7 were Vannevar Bush, '16, Corporation Chairman, John W. Gardner, Commencement Speaker, President James R. Killian, Jr., '26, and Chancellor J. A. Stratton, '23, in reading order.

In Knowledge Lies Security

Education entails obligation for the professional man to use his intellect and experience to advance the common account

FAREWELL ADDRESS

by J. A. STRATTON

WITH the presentation of the academic degrees, the high purpose of this Commencement has been fulfilled. It is my privilege to bring to you who have graduated here this morning all the good wishes of the Faculty, the Officers, and the Corporation of M.I.T. — briefly and informally, but with a full measure of pride in your accomplishment. No one, it seems to me, can participate in Commencement without being deeply moved. It makes no difference whether you are seniors, or have attained the degree of master or doctor. It is our leave-taking and a very great moment — one which you will remember all your lives. What has taken place here this morning is the culmination of so much work, of steadfast persistence despite frequent disappointment and frustration, and the final realization of many hopes and ambitions — the reward often of real sacrifice on the part of you and your families. The diplomas that you hold in your hands are the symbolic evidence of great achievement and bright expectation.

You came first to this campus only a short time ago. You flowed in, as it were, from all over the world; you came from every state in the Union, from Alaska, Hawaii, Puerto Rico. You represented 23 countries and all the continents. You brought to us the variety of experiences, the profusion of cultures and traditions and faiths that is the heart of America. Yet with all this diversity you had also many things in common. You demonstrated unusual qualities of mind, with a disposition for mathematics and a great motivating interest in science and its applications. Each of you gave promise of energy and ambition and a sense of purpose. To these qualities it seemed to us that you added integrity and firmness of character. Your admission to M.I.T. was a privilege which you had earned with merit.

You have been with us really a very short time indeed, and today, so soon, you disperse again — some to graduate study, others to the wide range of occupations and professions that now lie open before you.

Acquiring a Professional Foundation

Out of this brief experience will have grown lifelong friendships, and I do believe that you carry away the imprint of a great institution of learning and the proud heritage of an M.I.T. education.

You brought to us your talents and we have tried to bring them to fulfillment. It has been our aim to develop habits of thought and methods of attack

to see you through the difficult and challenging years ahead. We have done our best to give you a firm grounding in mathematics and physics and chemistry. Even with the undergraduate years you began to acquire the foundations of a profession. Through the humanities you have come to sense the vast sweep of great ideas and human problems so that you might awake to the wider responsibilities of scientists and engineers in modern society. By design we have avoided the mere accumulation of factual data and preoccupation with those special techniques useful today and obsolescent tomorrow. For all our efforts we shall be content if only we have succeeded in imparting to you the confidence that, even though you don't know the answer to a problem, you have within yourselves the resources to attack and to resolve it.

Crucial Test of Educational Plan

The crucial test of every great plan of education lies in its relevance to the conditions of the age. In this sense you may be confident that wherever your career may lead, the methods and the principles you have absorbed in these years at M.I.T. will serve you well. Within the lifetime of you who are graduating today there has been an almost explosive growth in the technology at our command. So swift has been the rise of science and engineering as shapers of our society, and of all civilization, that many still fail to grasp the breadth and strength of their influence. But I believe that we can say to you with all honesty that your education is well adapted to this world in which you will live.

One of the sharpest criticisms commonly made of your generation is your preoccupation with economic security. The only lasting security lies in the power that comes from knowledge. Remember, therefore, that there is no static frontier of science. You must keep pace with its advances. As Dean Harrison told you yesterday in his Baccalaureate address, Commencement no longer marks a sudden emergence into full professional status. Education is more than ever in this age of ours a continuing process. You will never be able to rest solely on the knowledge you have acquired, but with this strength you have gained you need never fear the progress of science nor the innovations of technology. You have invested your future in these years at M.I.T. You carry away with you today the only wealth that is proof against

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Today's Science — Tomorrow's Promise

SYMPOSIUM ADDRESS

by JAMES B. FISK

THIS prophecy, made at any time in the past two centuries, would have been borne out ultimately by what followed. The promise of earlier times was that certain parts of nature would be understood. Much less was it then a promise of depth and breadth and unity of understanding, or of the control of nature that knowledge gives, or of the humane ends which science could serve. Science is the rational foundation for the practical arts and industries and for the physical means for our national defense, but they are not all equally well rooted in science nor, in the past, has science always been the strong partner it might have been in our society.

There have been giant steps in the history of science: Newton's laws of motion which are the basis for the science of mechanics; Maxwell's equations and Faraday's laws which are fundamental to all of electrical science and much of physics; and the heroic work of Max Planck which underlies modern quantum physics. Such peaks of achievement have justly commanded the respect of following generations. But let us not lose sight of the fact that in our industrial history the practical arts have produced profound changes, often without much help from science.

Tomorrow's promise is that today's science will more rapidly broaden our understanding of nature; that it will provide deeper roots for broader segments of tomorrow's life and work; that it will provide greater choice and greater opportunity; and that it will give sounder means for making the choices which will have to be made.

We who are part of the world of science and technology accept as an axiom — based on observations from experience — that today's science is tomorrow's promise. The newcomer, however, and those who are not themselves a part of science and technology, although surrounded by it, deserve some understanding of the methods and results and implications of science. And the skeptic must be assured that science and technology have not run their course — rather that there is no end to new knowledge and no end to its fruitful employment.

It has been fashionable to speak of the industrial revolution and the decades that followed as the times when men's muscles were supplemented or replaced or extended by machines. Today it is fashionable to speak of electronic brains. Both analogies are attractive and both are useful if not pursued too far. We will come to an electronics analogy, but let us spend a moment first on muscles and machines. The old

and familiar example of the increase in man's capacity for doing work is worth recounting for we can see, quantitatively, how far we have come. Also, we can see, qualitatively, that there is still something left to do. The example gives evidence that yesterday's science has shared importantly with technology in building today's reality.

A strong man, for a few minutes, can do work at the rate of about one horsepower — which means, for example, that he can climb a hill 200 feet high in about one minute. In sustained effort he could hardly do work at one-tenth that horsepower. To overcome this limitation, the sciences of mechanics and thermodynamics, of metallurgy and chemistry and electricity have joined over the years in fruitful combinations. Ingenious engineers have taken from science what they needed and could use and have produced a great array of machines. The capacities of the lone individual for doing work have truly been extended. With a small tractor man may control 10 or 100 times his former mechanical power. A bulldozer or a large earth-moving machine gives him another factor of 10 or 100. The driver of a large Diesel locomotive controls 10,000 horsepower. The master of a large ship controls 100,000 horsepower. Thus, in a sense, there has been an increase of a *millionfold* in man's capacity for doing mechanical work.

In this example, which is not unique, I might first have observed that with the conversion of energy into useful forms we can now do many things which earlier could not have been done at all — or only at great cost or inconvenience. But I would rather emphasize the factor of 1,000,000 which is a measure of achievement, and note the word "control" which I have used several times. Control — in the mechanical analogy with muscles — is important, and in the fields of electronics and communications which we are coming to, it is essential.

The science of the past gives the rational basis for the utilities and necessities, the economic adjuncts of our society. In part, it is in the basis for the present character of our society itself. Our position is being advanced — not so much by invention, as in the past; invention itself is no longer the criterion of progress — our position is advanced primarily by the novelty of original and unexpected discoveries in nature coming from basic research. The science of today is more vigorous than it has ever been. If science and the most basic research are maintained in a healthy state there can only follow a future richer and more abundant than the past.



Symposium speakers Jerrold R. Zacharias (left) and James B. Fisk, '31 (right), confer with Chancellor J. A. Stratton, '23, who presided at Alumni Day Conference.

I expect you are now impatient. You have heard such assertions and expressions of faith before. Where, you will ask, can we look for significant happenings? And what are they likely to be? The answer, of course, is that no one really knows. The only thing we can be absolutely sure of from science is that there will be greater understanding of the world we live in. There will be change and there will be improvement.

Each of us can make his own catalog of changes that have taken place over the past years. Some of these are so great and so dramatic that we may tend to overlook the more gradual, cumulative importance of hundreds of others. I suspect that if some catastrophe were suddenly to undo the cumulative changes of the past 50 years — in transportation, communication, power, accessories, food, medicine, and the rest — we could not function as a civilized society. The skills and crafts which nurtured the self-sufficiency of our forefathers are largely forgotten. But this is the path we are following, and I suspect, further, that the cumulative changes in some much shorter period in the future will be equally great.

Now, taking refuge in probabilities, we can make some cautious observations and predictions.

The life sciences, biology and medicine, certainly give strong promise of advance and change. The sciences of chemistry and physics and mathematics are now joined with the life sciences in powerful assault on the understanding and control of disease.

The agricultural sciences are by no means dormant. Agriculture has drawn from many sources; from biology and from chemistry, and from all the sciences which have given us machines. Food is not a problem to us today. Some day it may be and science will surely meet this challenge.

The sciences of materials — particularly the physics, chemistry, and metallurgy of solid materials — have gone forward with extraordinary vigor since World War II. Materials in common use whose properties are *understood* range from plastics and fabrics unknown a few years ago to ceramics and metal compositions with properties previously unattainable.

Almost everything we use or work with, and all of our structures, are made of solid materials. Throughout history separate technologies grew up in the materials industries without much science to support them or to tie them together. But this is no longer

the case; we are in a renaissance. We are no less interested than before in such questions as the strength of structural steel or the ability of some materials to conduct electricity, or the magnetic properties of others. The changes lie in the point of view, in the cohesion of knowledge and in our greatly increased understanding.

Science now asks and finds answers to such questions as these: What are the *atoms* — all of them — which make up the solid? How are they arranged — or disarranged? How did the arrangement come about? And what properties result from the atomic arrangement?

Who would have suspected that one "foreign" atom among 10,000,000 "native" atoms — for example, one atom of phosphorous in 10,000,000 atoms of silicon — would have a measurable effect on the important electrical properties of silicon? Or who would have suspected that occasional atomic vacancies (missing atoms) or dislocations in an otherwise perfectly ordered array of atoms in a crystal would alter the strength of the crystal by a factor of 10 or 100?

Understanding the atomic, the microscopic structure and composition of a very few substances in nature, is the basis for a whole new industry; solid electronics. The family of transistors, and their close relatives, have led to improvements; to better ways of doing things we already knew how to do. More importantly the new devices are leading to change; to doing things that were not possible or not feasible to do before.

The new solid-electronic devices and the new services they will perform are much to be commended. And they have been. There is, however, a broader philosophical point to make. Increasingly, the deep understanding that comes from scientific inquiry is preceding technology and leading the way. The transistor is a fine example. It came directly from enlightened, basic research. Hundreds of useful inventions have followed. The same approach — and it is being made in many fields today — is part of tomorrow's promise.

Now, for a moment, let us turn to nuclear science and atomic energy which are much in the public eye. Two obvious and outstanding facts are these: The destructive energy available in a single bomb, transportable by air, has increased a millionfold in 12 short years; and the energy available from the fission of uranium atoms for the production of power is likewise concentrated.

What this energy concentration may mean in peace and war is not solely a technical question. I don't propose to discuss it. Let us observe simply that nuclear science in the broadest sense is perhaps the most active and vigorous field of scientific inquiry today. And let us observe in passing that nuclear science also involves intimately one of the major new aspects of modern science and technology — quick and precise sensing and measuring for the control of nuclear energy and for insight into all

Exterior view of the Karl Taylor Compton Laboratories which were dedicated at ceremonies in the afternoon of Alumni Day, June 10. The Computation Laboratory is housed in the one-story annex at the extreme left. At right the new Compton Laboratories connect with the Dorrance Laboratories of Biology and Food Technology. The five-story Karl Taylor Compton Laboratory will be used for teaching physics, as well as for research in electronics and nuclear science.



nuclear phenomena. The means of measurement and control are largely electronic.

Closer to home are the interrelated fields of electronics and communications and the physical sciences on which they depend. For this part of my discussion it will be useful to turn to analogy again for a scaffold to construct the argument.

A general analogy and perhaps a suitable one for the moment is the central nervous system in comparison with the functions which electronics and communications now perform and which we may expect them to perform. In brief, the central nervous system performs these functions: Through a variety of sensing elements it receives information. Information is transmitted through the system. The information may be stored more or less permanently for later reference, stored temporarily, or used immediately. Logical operations are performed which we call thinking (sometimes non-logical operations are performed). Signals or commands are then transmitted which result in some action. Additionally, there is what engineers call "feedback"—some means by which the response to a signal or command is monitored and controlled.

Thus the human central nervous system provides the means by which the activities of all of the parts of a man are made to work effectively with each other and with his environment. In just the same way the various parts of our modern society can work effectively together only because information can be collected, transmitted, remembered, and used. A major achievement and promise of modern electronic and communication science is that it provides and will continue to provide increasingly effective means for these vital information handling functions of our society.

A quantity as important to mankind as information deserves to be measured. Science has given us a new concept, a new tool, called information theory which permits us to measure information and in many situations to estimate the size and complexity of the electronics and communications job and to tell us how efficiently we are doing it.

But first, some definitions and a few numbers. Information can be conveyed in a variety of forms. For example, a knock on your door (a pulse of sound energy) tells you someone is there. A particu-

lar sequence of knocks (or pulses) may tell you who it is. Thus, an elementary form of information is a pulse of energy, and the smallest quantity of information is a "bit," such as a single pulse. The term "bit" is a contraction of the two words "binary" and "digit." For our purposes it is enough to say that a "bit" of information is essentially a "yes" or "no"; either a pulse of energy is present at a particular instant or it is absent. This is not as strange a concept as it may at first seem. We have all received telegrams and we know that the actual letters and words we read did not come over the wire. What came were electrical pulses—bits of information—arranged in such a sequence that they could easily be converted into characters and words.

Now there is good evidence that the nervous systems work with small pulses of energy and bits of information. The language of modern electronic computing machines is also the "bit." And when you use the dial on your telephone, the dial pulses which precede your telephone connection carry the bits of information which tell the telephone central office what number you want and how to set up the connection automatically.

The human mind is said to have ten thousand billion neurons and can, presumably, store a comparable number of bits of information. A modern telephone exchange or switching center has a memory capacity of about 100,000 bits and a large electronic computer or business machine has capacity comparable to that of a telephone exchange. On the other hand, measurements show that a human being can absorb only about 40 bits of information each second in ordinary reading, whereas electronic machines can today operate at a rate of 1,000,000 bits per second.

Thus, we see some qualitative similarities in our analogy as well as quantitative differences. The analogy also includes some clues for the evolution of electronics and communications, and a role for the physical sciences beyond their more familiar role in materials and in the conversion and uses of energy.

Electronics and communications deal with "information." Any information which can be converted into electrical form is fair game, and science has taught us how to convert almost all kinds of information into electrical form. The native habits of

electrons in materials, and the physical effects nowadays recognized as resulting from them, are turning out to perform just the functions laboriously sought from "electricity" in the earlier communications and power technologies. Microphones, transmitters, and receivers convert sound into an electrical equivalent, or vice versa; photocells and television cameras convert light into electricity; electronic gauges detect and measure otherwise imperceptible mechanical motions; temperature, molecular motions, the flow of gases and liquids, the thickness of sheets of metal or plastic, the disintegrations of individual atoms, and the passage of cosmic rays through the atmosphere — all can be detected and measured electronically. Sensing and measuring is done not only in close contact but also at a distance, as in the example of radar, where electrical waves, or pulses, together with complex electronic gear measure the position and velocity of objects many miles away.

In the handling of information we must discuss storage or memory, which I mentioned a moment ago. Information, if it is not to be used immediately, must be stored or memorized. Sometimes it need be stored but a few millionths of a second, sometimes very much longer. A tiny magnet, the size of a pinhead, can store one "bit" of information; so can a whole class of substances called "ferroelectrics" which in useful forms are newcomers in the field. So, too, can a photographic plate store information — and a great deal of it; and so can a speck of "phosphor" such as each of the many specks of phosphor which cover the face of your TV tube.

Information, to be useful, must be available when it is needed and be available quickly. If it is not already obvious, electronics has one outstanding virtue. It is fast. Information cannot only be transmitted fast, it can be memorized fast and retrieved fast: 1,000,000 times per second is common practice today.

In providing the varied means to do these things, science has also provided us with the means to manipulate the information we have at hand. All of the essential and basic logical operations (for example, the arithmetic operations) can be performed at these same speeds by combinations of electronic devices. The new devices from solid-electronics are small, reliable, and efficient, well adapted to their new chores in contrast to the devices of a decade ago.

Next, let us look briefly at the transmission of information, a vital part of the job. Communications is a highly technical industry, and it is very firmly rooted in the physical sciences. Perhaps more than in any other industry its science has been cultivated, and cultivated in close partnership with its technology. The larger promise of science has been met and is being met.

For example, we have all become accustomed to telephone calls across the country or, more recently, under the ocean with fidelity of transmission equal to that of calling one's neighbor. And although we have all seen television pictures which have been sent over great distances, few realize the hidden complexities of such transmission and interconnection. Few realize that the voice now carried by cable under the ocean is "repeated" or amplified by a factor of 10,000 at each of 50 different points

along the ocean floor. The total amplification is a very large number. It is 1,000,000 multiplied by 1,000,000 more than 33 times or in simple terms 10^{200} (a number far greater than the number of particles in the universe). But even in this technically sophisticated industry the change we see directly ahead is greater than at any time in the past. It is predicated on what we have learned in the past few years from science, from basic research, from new understanding, new materials, new devices, new methods.

As you can see from what I've been saying, we have in hand means to perform each of the simpler functions of the central nervous system. In some respects electronics and communications have the edge: they can transmit and handle information *much* faster than a human and they can provide for action at a distance. In other respects they are more limited: the memory capacity of electronic machines is far less than human memory and, although "feedback," which I mentioned earlier, is used extensively in electronic systems, we are just beginning to teach machines a more subtle human form of feedback — namely, learning by trying.

The fact that electronic machines are "simple-minded" is of course a handicap, but they can afford to be simple-minded. They make up in speed much of what they may lack in sophistication or flexibility. Again there is a factor like 1,000,000 before us; a measure of electronic capability, a measure of achievement.

Science and technology have served us well. We are now on a high plateau where our material needs and our material wants are abundantly cared for. We have abundant power to do our heavy work. There is no doubt that science can maintain and improve our present position and, increasingly, the living standards of the rest of the world.

The challenge, and the promise, is not solely that we do these things: rather that we do them well and efficiently and do them for the best ends of human welfare. The increasing complexities of modern life place unusually high premiums on information and on its efficient use and, therefore, high premiums on electronics and communications. The effective conduct of our national life, of business, of industry, and of our national security depends largely on intelligent information, intelligently used.

Parallel Challenge — Parallel Promise

Today's science promises the understanding, the materials, the devices, and the methods to meet the technical challenge. But science has had little to say on the less technical questions of what information is of value and on how the information is to be used. So there is a parallel challenge and a parallel promise; that today's *scientists*, with increased social responsibilities in a highly technical world, will provide sounder bases for decisions. Science permeates and will continue to permeate our society. It is important that science extend a firmer hand to society, and important, in turn, that society recognize the understanding and the strength that science offers.

Educational Methods and Today's Science — Tomorrow's Promise

SYMPOSIUM ADDRESS

by JERROLD R. ZACHARIAS

IN November of 1956 the National Science Foundation made a grant to M.I.T. in support of an effort to improve the teaching of physics in the secondary schools. A group was established under this grant, called the Physical Science Study Committee. It now consists of physicists from many universities and from industrial laboratories, of high school teachers and of educators. It is doubtless for this reason that I have been asked to speak on this symposium — "Today's Science — Tomorrow's Promise." How can we help fulfill it? It is my intention to report to you on our progress to date and on our plans. But before I do I must make a point which is stimulated by the title of the symposium.

To many people, science is regarded as a kind of seed corn to be grown and hoarded, in case at some future time, we need to grow a new crop of technology — to give us *more — more things*, *more leisure*, *more control over the forces of nature*, more mechanisms for the besting of our rivals and more devices for the confusion of our enemies. But to many of us who work in science, in laboratories, who work at theory, or teach science to younger men, we think of science as a part of our culture. Man is different from the lower animals, not so much because he uses tools for his betterment; a chimpanzee can pile a box on a stool to reach a banana, the beaver, the symbol of M.I.T., builds his dam of things for his own betterment, and the spider uses automation. We are different from other animals, we hope, in that we are trying to understand our world, our universe. We strive to know the *meaning* of the things we see in nature. In many ways, the more we try to discern the orderliness of nature, the less conspicuous does man become. The great telescopes — even now the radio ones — seem to make us feel less conspicuous in the scheme of things, and worse, leave us with those peculiar feelings of wanting to know what's out there beyond what we see. And in the other direction, toward the small, the more we seek to see the tiny things — the atoms, their nuclei, the constituents of the nuclei — the more we see how difficult it is to think clearly without having nature herself show us the way. A prodigiously elusive sub sub particle of matter, the neutrino, is just beginning to become clear. But I would rather understand the role of the neutrino in nature than to harness it to make longer tails on our cars.

To return to our subject, the Physical Science Study Committee considers itself to be engaged in

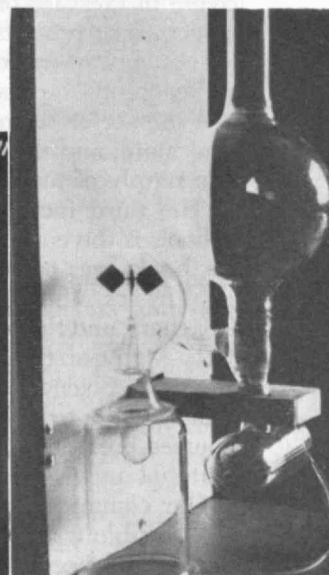
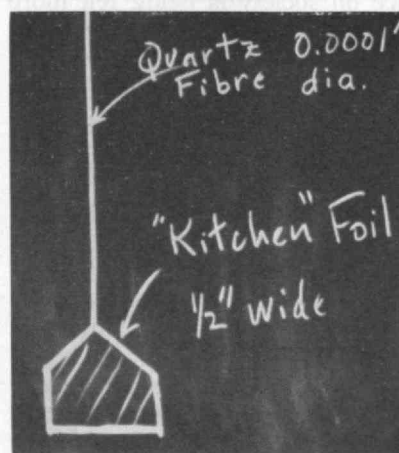
an experiment of five or more years' duration. Its point of view is expressed in three interrelated aims: (1) to present physics as an intellectual and a cultural pursuit which is part of present-day human activity and achievement; (2) to plan a course of study in which the major developments of physics, up to the present time, are presented as a logical and an integrated whole; and (3) to assist existing physics teachers, by means of various teaching aids, to carry out the proposed program.

The realization of these aims will require considerable effort over a considerable period. The Committee has studied various approaches in order to learn how best to prepare a realistic, effective program. The subject matter will be presented to teachers and to students through several media concurrently: *textbooks, manuals, films and film strips, classroom demonstrations, laboratory work, and work that a student can do on his own* — using what I call kits for kids.

The situation of science in high schools has been recently the subject of many discussions both among the public and among educators, and is widely known. For a brief review of it, attention may be focused on three main factors: the student population; the teachers; the curriculum.

The basic pattern of our high schools was *set* at least 80 years ago. At that time only a few children

Fig. 1. (left) Blackboard diagram of simple apparatus by which pressure of light may be demonstrated. Fig. 2 (right) Common form of radiometer at left with evacuated tube containing aluminum foil vane supported by quartz fiber to form torsion pendulum for demonstrating light pressure.



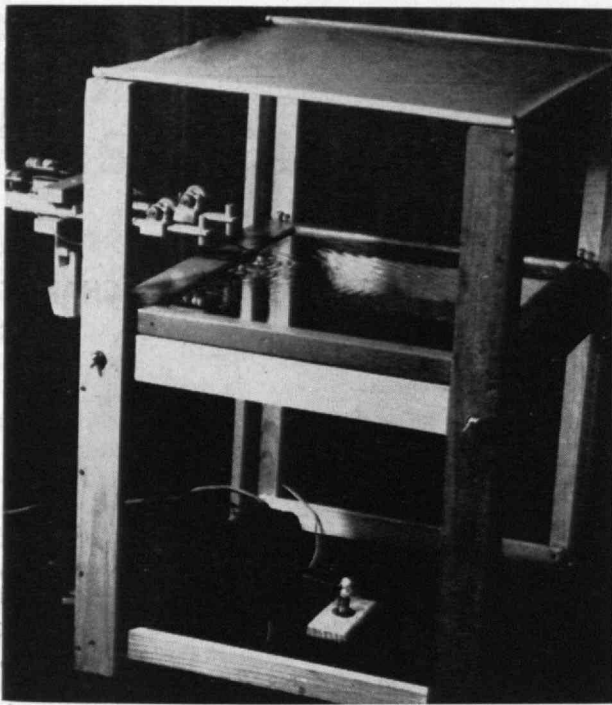


Fig. 3. Simple apparatus for demonstrating waves may be made by combining into wooden frame automobile taillight (bottom), horizontal window frame with layer of water (center) and oiled paper projection screen (top). Battery-driven toy motors agitate celluloid balls immersed in liquid to produce waves.

went past the elementary school. A much larger proportion of children is now attending high school, and the total population of children is rapidly increasing. Forecasts for the sixties, when those born during the "baby boom" of the late forties will reach high school age, indicate that we shall have some 9,000,000 students at the beginning of that decade and some 12,000,000 by the middle of it, as against about 7,000,000 in 1954-1955. We must learn how to educate these children.

The number of qualified high school teachers has not been increasing in the same proportion. The demand for teachers is already greater than the supply and is growing fast. This shortage is particularly acute in the case of science teachers: industries and government projects recruit more and more scientists so that fewer are left for the less remunerative jobs of teaching. A paradoxical situation has ensued: as the impact of science on society is being felt more and more, and the demand for scientists is growing, the supply of teachers is diminishing.

The third factor of the science situation in high schools is the curriculum. A special survey of physics textbooks was carried out by the American Institute of Physics, the American Association of Physics Teachers, and the National Science Teachers' Association. Many of the texts were also examined by the Physical Science Study Committee. All surveys reached the conclusion that high school physics courses present too much material, and choose that material unwisely.

Our committee has given careful consideration to the possible ways of striking a balance between two needs: the need of restricting the material taught

in the course to allow time for illustrating the scientific method and the role of science in our culture, and the need of giving to a student a sufficiently unified, comprehensive, and wide view of the whole field of physics, to satisfy his broader interest. To help obtain this balance, the committee is preparing a course and supplementing it with a series of "monographs."

The course will present a reduced amount of material, and will not treat it all in the same way. Some scientific developments lend themselves to illustrate the evolution of ideas, the interrelation of various fields of human activities, the scope of physical science. These will be explored deeply, slowly, and thoroughly. The field of optics and waves and that of mechanics have been chosen for this kind of treatment. Other parts will require broader coverage: thus the role of atoms in the physical world will be illustrated in many examples throughout the course. Other parts will be only surveyed. In order to stress the unity of physics and the coherence of physical ideas, the course will be focused toward a unified picture of nature, the atomic picture. Thus the student will learn not only the physics of the past, but also the physics which is being made by men of our generation; which is affecting his present and his future; which is still an open field one of whose many paths leading to the unknown he may elect to follow.

In the preparation of the tools to implement the course the Committee is guided by two sets of considerations:

1. The most effective way of teaching, we believe, is to use several methods and media concurrently. Some parts of physics, like evolution of ideas, mathematical deductions, and so on, can best be learned if read over and over repeatedly and from several points of view. The significance of physical phenomena, on the other hand, will best be understood if the phenomena are seen over and over again repeatedly and from several points of view. And the experimental method can be mastered both by seeing how demonstrations are prepared and carried out, on film and in the classroom, and by actual experimentation in the laboratory.

2. Students learn physics not only through the formal teaching, but also by *doing* physics. Teachers must encourage and lead students to work independently, to make their own observations, and to push forward the frontiers of their knowledge. In the classroom the attention of the students must be engaged so that they listen and see and question and discuss. In the laboratory and at home they can do and question and discuss, and thus they will learn.

Among the materials which the committee is preparing for both teachers and students are a detailed syllabus and a textbook, films and film strips, manuals for teachers and for students; suggestions and equipment for classroom demonstrations and laboratory work; kits for students; monographs and selected bibliography; questions for tests and exams, for use both in the course and for college entrance examinations; placards, and so on.

Let me discuss the educational films by showing a small piece of one, our first effort in trying to learn

how to make them. It will come at a time when the students will have learned something about light and are being shown how experiment and theory work together. We do experiments from which we make a theory. The theory suggests new experiments. We perform the experiments. We modify the theory usually as a result of the experiments, and so on. I call it right foot, left foot, right foot, left foot — experiment, theory, experiment, theory, and so on. A theory of light predicts that light should exert a pressure; that if you put your hand out in the sunlight there should be a small force on your hand pushing it away from the sun. We will break into this film at the point where our lecturer, Professor Thomas F. Jones, Jr., '40, of the Department of Electrical Engineering, is about to demonstrate this incredibly small effect.

Film

Now what is good and what is bad?

First, our man with the incredible name of Professor Tom Jones, a wizard electrical engineer, is a warm human. He is not a gnome, a "quiz kid," or a "drip." His accent helps to set the pace and his enthusiasm is real. For this particular apparatus his enthusiasm is not as great as mine, because I built it. But his is greater in the next version, which we have already made. In fact, at the time of making this film there were only a few score of people in the world who had witnessed — as you just have — the direct effect of a force exerted by a beam of light. But that statement is not quite correct. Every one of you has at some time looked up into the heavens at the stars. The big stars are held in balance by the pressure of light. Let me explain this. The heavenly bodies hold themselves together by a force called gravitation, which is small for small planets like earth and large for stars like the sun. There must be an opposing force or it would collapse to a point. For stars like our sun, this outward opposing force is due to a gaseous pressure just like air pressure only greater. Now in the large stars, say five times our sun's mass, the gravity is so great that the gas pressure is not enough to hold it out. The stars contract, therefore, getting hotter and hotter up to a point when the light pressure builds up enough to keep them puffed out. Thus this seemingly trivial effect, that we were stimulated to learn because of the theory, turns out to be one of the major structural elements of the universe. As a girder is to a bridge, so is light pressure to a star.

There are obvious defects. The film is not in good enough focus to see a diagrammatic view of the apparatus by looking at the apparatus. A blackboard diagram might look like Fig. 1 (page 501). A medium close-up view of the apparatus might look like Fig. 2. There are other obvious faults but never mind.

Let's look at what we are doing with apparatus. First, I would like to remind you that all motions are guided by the laws of waves, not just light and sound. Everything that we know about moves as if it were a wave — you, me, the atoms, the electrons, everything. The wave nature of everything was first formulated in 1926 by Schrödinger, Heisenberg, and Born, and we are just getting around to admitting it.



Fig. 4. Ripple tank picture showing circular waves produced by single source disturbance.



Fig. 5. Two sources of disturbance operating in phase produce two separate circular waves whose resultant is as shown here.

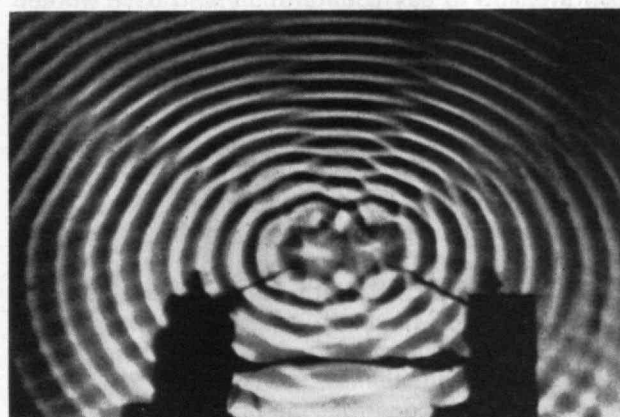


Fig. 6. Ripple tank apparatus used to demonstrate phase changes at the null positions of two wave sources. The phase changes can be seen along straight lines radiating from the common center.

So we want to enable people — not just engineers and scientists — but lawyers and doctors and politicians, too, to know what a wave is like, without any mathematics. So we don't just say, "Drop a stone in a pond." We want to explain the whole host of wave phenomena that are around us all of the time. We have to do this with apparatus that costs practically nothing — that the kids can build and the schools can use. Such a device is known as a ripple tank. A well-known apparatus company makes one to
(Concluded on page 550)

Toward the Second Hundred Years

NINTH ANNUAL REPORT

by JAMES R. KILLIAN, JR.

I HAVE come to cherish this annual opportunity which you give to me to talk about the Institute, to discuss with the candor possible only in the intimacy of the family circle our plans and aspirations, our failures and successes. Such a discussion is all the more appropriate and productive because of the exceptionally constructive and mature relationship which exists between the Institute and its Alumni.

At M.I.T. we do not have, nor do we need, the academic side-shows, the big-time athletics, the alumni whooperamas which are sometimes employed to entertain college alumni. Instead, we have a great tradition of putting education first, an austere tradition, perhaps, but one that has given this institution a style and personality and special excellence, and which wins for it a brusque loyalty that has the depth of a professional allegiance rather than the shallow emotion of a sentimental attachment. This is the M.I.T. style that prompts a reticent but uniquely authentic loyalty, and that gives our corporate life an exceptional integrity, coherence, and fellowship.

In making my annual report to Alumni, it is only fitting for me to acknowledge the splendid manner in which the Association and its officers support the Institute, and to pay tribute to all who have worked so ceaselessly and energetically to help achieve Technology's objectives. This year your President, Theodore T. Miller, '22, has travelled far and wide in advancing the Institute's aims. He has visited many M.I.T. clubs, has taken a most active part in two Regional Conferences — one in Tulsa on February 2, and the other in Chicago on February 16 — and has been a most effective emissary for the Institute at the "M.I.T. Week End in Havana" toward the end of February, and the "Ninth Annual Fiesta" in Mexico City in mid-March. In addition, he has been a most effective member of the M.I.T. Corporation and richly deserves our thanks.

To follow precedent, let me first report briefly on gifts, finances, and placement. This year, total gifts and bequests will exceed nine million dollars, giving us an average annual gift total for the last five years of \$7,500,000 per year.

The book value of our entire invested funds now totals \$89,000,000, up \$6,800,000 over last year. The market value stands at \$129,700,000. We are presently earning 6.27% on the book value of our invested funds. Despite this gratifying increase in endowment, the Institute's endowment on a per-student basis is still about half what it should be, and we have no margin for growth. I do report with pleasure that we will end the year with a balanced budget.

Demand continues high for our students. The mean of the salaries offered bachelor's this June is about \$470 per month base pay; for master's, \$565; and

doctor's degree graduates have ranged from \$625 to \$875.

And now with these vital statistics recorded, let me turn to other matters.

Several weeks ago, the College of William and Mary held a convocation in honor of William Barton Rogers, its distinguished alumnus who was M.I.T.'s first president. The occasion of this convocation was the 75th anniversary of Rogers' death. He collapsed and died on May 30, 1882, while addressing the Institute's graduating class. Today it is appropriate that we at M.I.T. note this anniversary and pay *our* tribute to the educational innovator and pioneer who founded this institution, defined its special mission, and endowed it with the philosophy, and personality, and form which characterize it today.

The founding of M.I.T. came about, in part, as a protest against the rigidities, the frozen classical formulas of then existing institutions. It came about in part as a response to new needs of an evolving industrial society. In part, it was an expression and projection of Rogers' clairvoyant reading of the future, the place that science would have in this future, and the new mode of education appropriate to this future.

It is important to M.I.T.'s present and future for us to keep clearly in mind these influences and breakthroughs in its past. We should regularly ask ourselves whether we still have the courage and imagination to innovate and to break with tradition. We should be watchful that we do not become the



In recounting Technology's progress in the past year, President Killian also establishes program for M.I.T.'s future.

prisoner of a rigidity and classicism of our own making. We should keep always before us as an ideal Rogers' vision of education constantly anticipating and adjusting to the needs of the future rather than being geared to a society that has been left behind. An institution such as M.I.T., if I may paraphrase Alfred North Whitehead, preserves its vigor so long as it harbors a real contrast between what has been and what may be; and so long as it is nerved by the vigor to adventure beyond the safeties of the past.

These reflections about our past and about our founder and his spirit lead us naturally and forthwith to a discussion of our institutional future. How can we continue to venture beyond the safeties of the past? How can we continue to exhibit the boldness and foresight of Rogers?

These questions are particularly apt since M.I.T. will soon reach its 100th birthday, that milestone occurring in 1961, a short four years away. Plans are already afoot to make this a memorable milestone, thanks to a committee under the chairmanship of John J. Wilson, '29, and I call now on all parts of the M.I.T. family to begin preparations for this celebration. I submit, however, that the most telling way to make this occasion meaningful and important will be for us to move ahead on every front during the next four years so that we may celebrate our 100th birthday with a sense of new accomplishment and heightened effectiveness, and with the satisfaction of feeling then that M.I.T. is ready for a second hundred years, a second hundred years greater even than its first.

As we begin now to ready M.I.T. for its second hundred years, what are some of the tasks we must accomplish and what are some of the evolving needs of our society that we must seek to meet? Of the many, let me suggest ten as typical of the opportunities ahead.

Item number one is the opportunity to make important new advances in engineering education. I am convinced that here M.I.T. has one of the greatest educational opportunities in its history. Our advancing industrial society in the United States, together with our world responsibilities, now require of our engineers a new order of professional excellence, breadth, and versatility. Our nation asks of its engineers that they be more than technicians or narrow specialists, that they henceforth have a deeper grasp of the scientific principles and concepts fundamental to their understanding of nature and a broader foundation of liberal education fundamental to their understanding of man.

In the second half of the last century, when men like Rogers were establishing engineering education in the United States, engineering schools were characterized by bold educational experimentation and innovation. In the first half of this century, while growing in competence and skill, our system of engineering education in the United States, except in a few specific fields, was less responsive to change.

Today there is a renaissance and M.I.T. is leading it. The changes which are taking place include the introduction of more basic science, the realization that professional competence can no longer be acquired by undergraduate study alone, earlier introduction of professional subject matter in the un-



Philip M. Morse, left, will direct the new Computation Center which, in a way, is modern counterpart of the differential analyzer developed by Vannevar Bush, '16, (with glasses). President Killian joins in dedication ceremonies as Thomas J. Watson, Jr., right, pushes button putting computer into official operation.

dergraduate curriculum, a recognition that new engineering sciences now require formulation and greater emphasis on graduate study.

Item number two is the opportunity before us at the Institute to break new ground in undergraduate education. I believe that a strong undergraduate program is an essential part of M.I.T.'s mission and that in the future we should be as innovating and pace-setting in this part of our program as we have been in the past and as we have been in recent years in graduate education. This undergraduate program should have academic standards as high as can be found in any educational institution. It should take full advantage of our opportunity to educate men and women who understand both the liberal and the practical significance of science in our society, whose education is adequate for modern social needs, both with respect to its high scientific and technical level and with respect to the breadth of knowledge and interest it engenders.

In his stirring Arthur D. Little lecture last month, Edwin H. Land, Fellow of the School for Advanced Studies, placed persuasive emphasis on the opportunity which great universities have, really to break with old patterns and to give full opportunity to the latent creative capacities of their students. Young people, he said, come to college harboring within themselves an aspiration toward excellence or greatness, and too often this image is blurred by their experience in college and they discouragedly accept lesser goals for themselves. At M.I.T. we possess one of the most highly selected student bodies in the world, made up of students competitively picked from all over the world. To cite one bit of evidence, if we add together the recipients of national scholarships and fellowships given by National Merit, General Motors, and the National Science Foundation, we find that more recipients elect to study at Harvard and M.I.T. than any other institutions. As one of our

Faculty members has remarked, we have a breathtaking opportunity to achieve a really close impedance match between this great student body and our great Faculty, to make available to our undergraduates in greater degree the stimulus, the imaginative leadership, and the example of excellence presented by men who are outstanding not only as teachers but in their professional accomplishments.

A university has many functions. As Woodrow Wilson once said, it must serve the nation as its organ of recollection, its seat of vital memory. Through its creative activities, it is one of the major means for shaping the nation's future. But it has another vital function, and this it especially performs at the undergraduate level. It should be a bureau of standards for its students' sense of excellence, their taste and their values. We should be able to say of every great college, to use a line from Robert Frost, "it asks of us a certain height." This I hold to be one of the prime responsibilities of our undergraduate program at M.I.T.

Engineers Need More Science

Item number three is the need to find a solution to the increasing demand on the part of our engineering students for more science. Increasingly, large numbers of these engineering students wish to and are encouraged to study physics and mathematics three or four years or more. Inevitably the rank and file of engineering undergraduates will require on the average three years of physics and mathematics rather than the two now prescribed. This is a highly desirable trend, but it imposes severe teaching burdens on our School of Science which we have not yet adequately found a way to meet. Especially do we need to find the funds to handle this teaching load and opportunity effectively. This is but one of the unfolding needs we have in our flourishing School of Science.

Item number four in this program for getting ready for the second century is the need to round out the program of our School of Humanities and Social Studies. In recent years, as you know, we have extended and deepened our curriculum and resources in this School, and our undergraduate program has commanded attention and admiration throughout the academic world. Now, in order to realize fully on this program, to stabilize and insure its high quality, and to bring the School to full maturity, we seek to continue the evolution of a School of true professional status and to develop first-rate new programs in the fine arts and political science. Perhaps ultimately we may wish also to add a strong program in the history of science and technology.

Item number five is the exciting opportunities opened up by our School of Industrial Management which Alfred P. Sloan, Jr., '95, founded. This spring we held a highly successful convocation marking the fifth anniversary of this School and pointing up the power and potential inherent in a wedding of technology and management. By our hundredth anniversary we can forecast that this new School will have realized the great promise of its first five years, not only in terms of its own professional program but in terms of its interrelations and influence with other

schools of the Institute. Already, M.I.T. engineering students are choosing more management subjects as professional electives in engineering courses, and there are emerging opportunities to formulate new courses and research programs which achieve an amalgamation of the engineering and management points of view. Already the School of Industrial Management and the School of Humanities and Social Studies work closely together, but out of this symbiotic relationship are appearing new opportunities for each to strengthen the other and for our total effectiveness in social studies to be substantially enhanced.

Item number six is the exceptional opportunity that we have at the Institute to prepare graduates for foreign service, especially in engineering. The United States needs more professional men who have the understanding and orientation to accept assignments in foreign service both for industry and for government agencies operating internationally. The resources of our Center for International Studies afford a first-rate opportunity, if we can exploit it, to introduce a selected number of engineers to foreign studies and to give many more a better understanding of foreign affairs and peoples. Perhaps the greatest shortage we have in the United States today, greater even than the scarcity of scientists, is professional men who have the orientation and preparation to represent this nation effectively in operations abroad.

Item number seven is the need to care adequately, through our School for Advanced Study, for the growing demand for postdoctoral study at the Institute and to make adequate provision for an increased number of visiting scholars.

Item number eight is to create, in our flourishing School of Architecture and Planning, a program of urban studies and research which can contribute toward a better understanding of the problems involved in rebuilding and replanning our cities to cope with congestion, decay, and the great impact of population growth.

Ninth in this list of opportunities and needs is a program to make our dormitories more effective components of our over-all educational program. Last year I reported on the recommendations of the Ryer Committee on the development of our dormitory system. These recommendations, plus other plans under development by the Office of the Dean of Students, are directed toward searching out new ways to make the dormitories realize their full potential as the "Sixth School" in our educational program at the Institute. Especially do we wish to find the means to increase the number of Faculty residents in the dormitories and thus to achieve our own indigenous version of a tutorial plan.

In connection with our athletic facilities, I am happy to be able to report to you that the Institute started construction this week on twelve new tennis courts, six fast-drying ones for match play and six all-weather ones. Arrangements have been made for M.I.T. to buy the Cambridge Armory from the National Guard and we shall use this new acquisition as a gymnasium. I am also glad to be able to report to you that ground will be broken, probably

(Continued on page 552)

Cardinal and Gray

A TECHNOLOGY REVIEW REPORT

CARDINAL events and graying Alumni were much in evidence as the school year came to a close at Technology. To the usual activities of Commencement Day and Alumni Day a number of innovations were added this year. The Institute now has a mace for use on ceremonial occasions; a gift from the Class of 1907, it was designed and made by Leverett H. Cutten, '07. The new Karl Taylor Compton Laboratories were dedicated, the Computation Laboratory was put into operation, and a nuclear reactor under construction was visited. A special feature of Alumni Day was a concert by the Boston Pops Orchestra in Kresge Auditorium to conclude the day's events in appropriate tone.

Events of Senior Week

As usual, the events of Senior Week initiated the activities at the end of the school year which culminated in Commencement Day, June 7, and Alumni Day, June 10. Following completion of their final examinations, members of the Class of 1957 held their Senior Class Banquet in Rockwell Cage, beginning at 6:30 P.M. on Friday, May 31. The Senior Class Party was held in the evening of Saturday, June 1, and Sunday was "M.I.T. Night" at the Boston Pops Orchestra, where members of the Class of 1957 went to Symphony Hall for the light and spirited music for which Arthur Fiedler has won renown. On Monday evening, members of the graduating class left Rowes Wharf for the Senior Class moonlight cruise. Tuesday evening, June 4, the Class held its annual commencement formal ball at the Sheraton-Plaza Hotel in Boston. The remaining events of Senior Week were given over to R.O.T.C. Commissioning Exercises, and the Baccalaureate Service on Thursday, June 6, and to Commencement on Friday, June 7. Thus ended an active round of social activities in which, for the last time, members of the Class could be sure of seeing their classmates as an entire group in full strength.

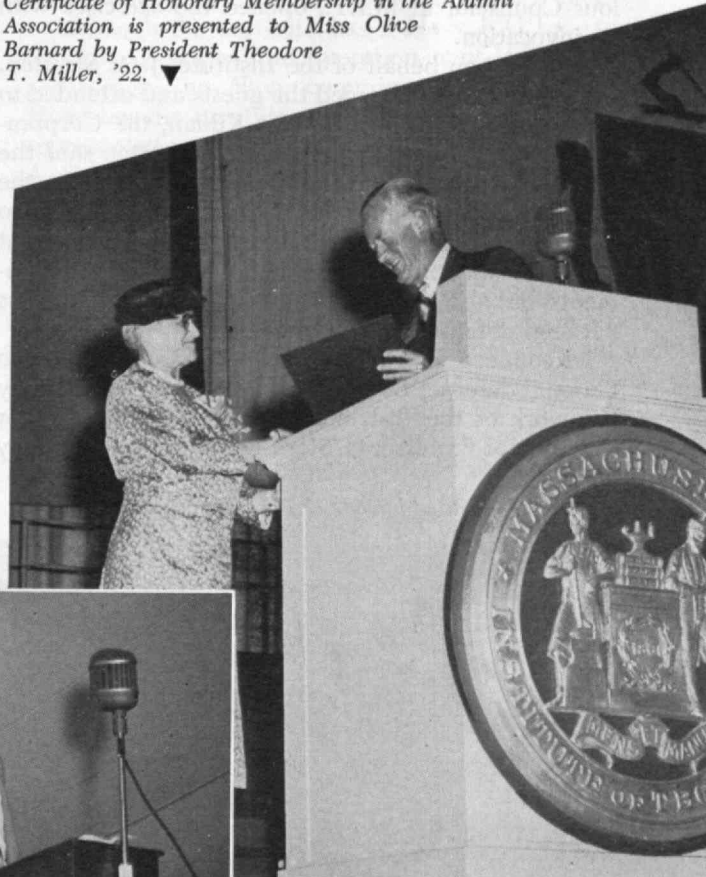
Time Capsule

At 2:00 P.M. on Wednesday, June 5, President James R. Killian, Jr., '26, assisted by Professor Harold

E. Edgerton, '27, of the Department of Electrical Engineering, deposited a "time capsule" in a concrete protective container in the ground adjacent to the Karl Taylor Compton Laboratories. The time capsule was planned and prepared by Professor Edgerton as a means of acquainting future generations with our way of life in 1957. The time capsule, about 10 inches in diameter and about 24 inches long, contains instructions not to open it before the year 2957. The capsule is made of glass and articles contained in it are sealed in a protective atmosphere of argon. Also in the capsule is a small bottle of radioactive carbon 14, with a half life of 5,600 years. The amount of radioactivity has been calibrated and marked on the bottle. When the capsule is opened 1,000 years hence, the reduction of radioactivity can be accurately measured.

The capsule contains writings of the late Karl Taylor Compton, a cryotron, a tonic bottle (empty), a mug, five mint coins placed in a plastic cube by the First National Bank of Boston, documents, scientific relics, copies of Boston newspapers, and other items giving some idea of the status of technology

Students, Alumni, Corporation, Faculty, Staff, and guests are represented in these two views made at year-end activities. Certificate of Honorary Membership in the Alumni Association is presented to Miss Olive Barnard by President Theodore T. Miller, '22. ▼



Mrs. James R. Killian, Jr., John W. Gardner, Commencement speaker, Malcolm M. Jones, '57, and Vannevar Bush, '16, at Commencement Day luncheon in the Great Court. ►





Pierre Joseph deMarcken deMerken, '57 (extreme left), and brother Louis Marie deMarcken deMerken, '57 (extreme right). Both received R.O.T.C. commissions as well as S.B. degrees at this year's exercises. Center view shows, in reading order: Colonel Charles M. McAfee, Jr., Professor of Military Science and Tactics; Captain Joseph S. Lewis, Professor of Naval Science; Reverend J. Edward Nugent, and Reverend Robert C. Holtzapfel, Religious Counselors; and Colonel Harmon Lampley, Jr., Professor of Air Science.

and science as of the year 1957, when the capsule was deposited.

The idea of the time capsule occurred to Dr. Edgerton in recent visits to Greece and other Mediterranean countries where it was customary to deposit material for the edification of generations to come, long after buildings and other physical structures had vanished.

R.O.T.C. Commissioning Exercises

Joint Commissioning Exercises for the Institute's Reserve Officers' Training Corps were held on June 6 at 10:30 A.M. in Kresge Auditorium. As they have done so well in the past several years, the Needham High School Band provided stirring band music on this important occasion, and they performed magnificently. The Reverend J. Edward Nugent, Religious Counselor at M.I.T., opened the exercises with an invocation.

Speaking on behalf of the Institute, J. A. Stratton, '23, Chancellor, welcomed the guests and extended to them greetings from President Killian, the Corporation, and the Institute Faculty. Dr. Stratton said the Institute was proud to acknowledge its debt to the defense of this country, and he recalled that, in two World Wars, the Institute had played an important role, not only in training men for military assignments, but also in conducting key research for various national defense projects.

In connection with the Institute's contribution to national defense, Dr. Stratton mentioned particularly the work of the Instrumentation Laboratory, under direction of Professor C. Stark Draper, '26, which may

well be regarded as a key to the guidance and control of our current missile program. Dr. Stratton also mentioned the tremendous contributions to national defense being made at the Lincoln Laboratory, especially with regard to early warning systems against enemy aircraft. But he also added that individuals of the Institute's Faculty and staff are making contributions as well, in the conduct of research projects, in serving on various committees, and in conducting consulting activities.

Speaking of the assembled cadets, Dr. Stratton expressed pride in those about to receive R.O.T.C. commissions. These future officers, he said, have demonstrated abilities as leaders and have completed a rigorous program of study. "We have every anticipation and every right," said Chancellor Stratton, "to expect that these young men will serve their country well in the future."

Dr. Stratton introduced the guest speakers representing the three branches of the Armed Forces: Major General Edward H. Underhill, Commanding General of the Eastern Air Defense Force who addressed the cadets on behalf of the Air Force; Brigadier General Charles C. Calloway, Commanding General, Quartermaster Research and Development Command who addressed those receiving commissions in the Army; and Rear Admiral John A. Snackenberg, Commandant of the First Naval District. Since the Naval R.O.T.C. unit at M.I.T. is but one year old, no commissions were awarded in the Naval Reserve.

General Underhill's message was addressed primarily to the cadets, rather than to the parents and guests who took part in these ceremonies as spectators. All of us are aware, said General Underhill, of the present extremely critical international political situation. We are assembled here primarily because of this unfortunate state of affairs. But we are also assembled because recent changes in the weapons of war place new and increased responsibilities on those engaged in the Nation's defense. There is now no geographical barrier to air power. We—and our enemies—can strike anywhere in the world where force is needed. But this does not eliminate the problem of personnel. The Air Force needs good and thoroughly trained leaders with backgrounds in technology if we are to have a professional fighting force in being.

The light-hearted brigade of 1957 charges for diplomas.





James M. Barker, '07, member of the M.I.T. Corporation, gives some good advice to the graduating class on behalf of the 50-year class. Urging the new graduates to view problems broadly, Mr. Barker also attacked the "us - engineers - don't - need - no - English" concept and admonished graduates to master the English language.



Theodore T. Miller, '22, leads Commencement procession followed by Reverend George O. Ekwall, '18, who gave the invocation, and John W. Gardner, Commencement Speaker.

The United States desires to have and maintain a professional force adequate for our defense needs, but the fulfillment of this object by means of modern weapons places heavy demands on all of us.

General Underhill then outlined what the Air Force could offer those who entered its service. It offers hard work, much responsibility, opportunity to use initiative and one's professional training, and it provides satisfaction for doing the tasks that need to be done. Moreover, General Underhill said, the Air Force offers membership in a fine organization.

But the requirements of the Air Force are equally severe. The Air Force expects its officers to accept heavy responsibility; it expects them to use their brains and to show initiative. It also demands a great deal of loyalty. It needs — and wants — those persons who show these attributes and who wish to be part of a fine organization. But it has no interest in recruiting those who do not have such characteristics. Finally, General Underhill (who attended classes at M.I.T. as a student in the Lowell Institute School) congratulated those cadets who were about to receive their commissions.

Speaking on behalf of the Army, General Calloway, 32 years a soldier, expressed the belief that the Nation as a whole recognizes that the military forces must become an indispensable part of our way of life as this is now molded by international events; there will be fearful consequences otherwise. The United States is, by nature, a peaceful and peace-loving nation. For this reason we have, in the past, tended to regard the military services somewhat indifferently. As a result, we have been caught unprepared in a number of crucial periods in our history, including our forced entry into two world wars. He mentioned General Maxwell Taylor's observation that, although the sad, treacherous events of Pearl Harbor left us with a determination not to allow repetition of the unpreparedness with which the Japanese attack found us, we still were not ready for the Communist invasion of Korea in 1950.

General Calloway remarked that the present threat to the United States — and the Free World generally — was clear for all to discern, and reminded the audi-

ence that unpreparedness in any future war would have vastly more drastic consequences than anything possibly could have had in the past.

The deterrent to future war is a show of real military strength, said General Calloway. We cannot bluff or make threats we do not intend to carry out. In one way, the gathering in Kresge Auditorium is a military conference which helps to assess our need for national security through build-up of the Reserve Officers' Training Corps.

Finally, in addressing the cadets, General Calloway congratulated them for having done their work at the Institute and in the R.O.T.C. program well, and reminded them of the great opportunity to serve the United States as they become commissioned officers.

Although the Institute has a Navy R.O.T.C. unit, this has been put into operation only last fall and, accordingly, no Navy commissions were awarded. However, the Institute was pleased to have the Navy represented in these exercises by Rear Admiral John A. Snackenberg, Commandant, First Naval District.

Admiral Snackenberg expressed his happiness at the opportunity to say a few words to the R.O.T.C. Class of 1957. He stated that a word we are hearing with increasing frequency is that of "survival." We tend to think of survival in the sense of mere existence, rather than that of outlasting or outliving something or some group of persons. But it is essential that we outlive and outlast Communism, if the Free World is to last. Thus, survival comprises our major objective, and our system of government must outlast and outlive that of Russia.

Whether we shall survive, and how well we can, depends in substantial measure on the young men who now constitute our defense team. It is clear that our military forces can help solve the problem of survival, and the young men, such as those who receive their commissions this year, will be of incalculable assistance in achieving this end.

Admiral Snackenberg reminded his audience that Reserve officers have great responsibility, for the United States places great reliance in having a large corps of Reserve officers. The need for citizens of the United States to serve their country is not a new one;



Honored guests at the head table at the President's luncheon, in reading order, were: Bryant Nichols, '07; Miss Stephany Gardner; Malcolm M. Jones, '57; Mrs. George O. Ekwall; J. A. Stratton, '23; Mrs. J. R. Killian, Jr.; John W. Gardner, Commencement speaker; and President James R. Killian, Jr., '26.

it was anticipated by President Washington who recognized the need for each person receiving the benefits of the Nation, to serve it in some capacity.

In becoming members of the Armed Forces, Admiral Snackenberg reminded the cadets that they would be serving in a great and ancient tradition. The Army and Air Force will expect significant deeds from those who receive their gold bars at the Commissioning Exercises; in a relatively short time, the Navy too will graduate members of the Reserve Officers' Training Corps. Admiral Snackenberg concluded by expressing confidence in those who end their training period this June at the Institute.

The oath of office was administered to the cadets by Colonel Harmon Lampley, Jr., Professor of Air Science. Colonel Charles M. McAfee, Jr., who leaves his M.I.T. post as Professor of Military Science to take up new duties as executive officer in Hawaii this summer, assisted in presenting the commissions. General Underhill then presented each man with his commission as second lieutenant in the Air Force, and General Calloway presented commissions in the Army Reserve. At this time 91 Army, and 27 Air Force Cadets received commissions. In addition, 31 in the Class will receive Army commissions and 12 will receive Air Force commissions by summer's end.

The Needham High School Band then played the National Anthem, and the Commissioning Exercises were concluded with the benediction given by the Reverend Robert C. Holtzapple, Jr., Religious Counselor at M.I.T.

As the cadets — now commissioned officers in the Reserves — left Kresge Auditorium with their friends and relatives, many a camera clicked on the adjacent green, and a new crop of gold bars could be seen being pinned on the shoulders of more than 100 newly commissioned second lieutenants.

Two brothers, who received their degrees at Commencement Exercises also received commissions at the Commissioning Exercises on Thursday. They are Pierre Joseph deMarcken deMerken, who will enter pilot training upon call to active duty, and Louis Marie deMarcken deMerken, who will enter the Air Force with Engineering Specialties.

Baccalaureate Service

About 2:30 P.M. on Thursday, June 6, members of the graduating class began to assemble in a double column in Briggs Field west of Kresge Auditorium, while parents and friends made the more usual entrance to the Auditorium for the Baccalaureate Service. When students, in caps and gowns, had formed columns, class marshals conducted the graduates into the Auditorium, a few minutes before 3:00 P.M., for the traditional services for those receiving bachelor degrees.

In the organ prelude, David Johnson at the Holtkamp organ played selections by Johann Sebastian Bach, Ralph Vaughan-Williams, and César Franck. The "Festival Processional" by Richard Strauss and the "Solemn Processional" from the Water Music Suite by George Frederick Handel were played as members of the Class of 1957 entered the doors of Kresge Auditorium.

President Killian opened the services with an invocation based almost entirely upon Gilbert Murray's translation of an ancient Greek prayer asking for guidance in moral conduct toward one's fellow man. After the invocation, the audience sang the hymn, "O God, Our Help in Ages Past" by William Croft. The scripture reading was given by Henry E. Salzhauer, President of the Class of 1957. Richard W. Knapp, Class of 1957 Organist, played the "Toccata" from



Honored guests at the President's luncheon on Commencement Day included, left to right: Ray P. Dinsmore, '14; Charles M. Wareham, '16; Carl L. Svenson, '19; Walter C. Eberhard, '14; Mrs. Herman Klugman; Herman Klugman; Miss Olive Barnard; and Miss Doris Peabody. Nearby, at right is Arthur L. Townsend, '13, and F. G. Fassett, Jr. Those marked with asterisk reach retirement status as of July 1.



President Killian (this page) seems to be addressing Dr. Killian (opposite page) at Commencement Day luncheon. Others shown are: James M. Barker, '07, Mrs. J. A. Stratton, Vannevar Bush, '16, Mrs. Theodore T. Miller, Reverend George O. Ekwall, '18, Mrs. Bryant Nichols, and Theodore T. Miller, '22, President of the Alumni Association.

Symphony V, by Charles Marie Widor, as organ interlude.

The Baccalaureate address, entitled "The Stream of Life," was given by George R. Harrison, Dean of the School of Science. The Review is pleased to reproduce this important message to graduates on page 491.

Prayer was offered by President Killian, the audience joined in singing "A Mighty Fortress Is Our God" by Martin Luther, and President Killian concluded the ceremonies with the benediction. The graduates left the Auditorium to recessional organ music which included "Trumpet Tune" by John Stanley, "Processional in G" by John Stanley, and "Processional from Judas Maccabeus" by George Frederick Handel. The postlude was "Prelude and Fugue in G Minor" by Dietrich Buxtehude.

Commencement

Weatherwise, Commencement Day, Friday June 7, began with a poor start. Early in the morning heavy rain threatened to dampen the holiday spirit somewhat. But by 10:30 A.M. when the Exercises got under way, the sun broke out occasionally, although the sky was still overcast most of the time.

While friends and parents took their places in chairs in the Rockwell Cage, graduates and members of the Faculty and Corporation, along with honored guests, were busy robing in the National Guard Armory. Last minute instructions were given, photographs were made as occasion allowed, until 10:30 promptly, when the procession, led by Class officers, left the Armory and proceeded, under canvas, to the nearby Rockwell Cage. Following the graduates came members of the Faculty, honored guests (including

Professors Emeriti, members of the Class of 1907 and officers of the Class of 1932), and finally Theodore T. Miller, '22, Chief Marshal, followed by President Killian, with Vannevar Bush, '16, Chairman of the M.I.T. Corporation, and Chancellor Stratton with John W. Gardner, the day's principal speaker, and the Reverend George O. Ekwall, '18. During the procession, David Johnson played an organ interlude from the organ in Kresge Auditorium, with sound fed to loud-speakers in the Rockwell Cage.

As soon as all had assembled, the Star Spangled Banner was played, and Dr. Bush opened the exercises. The invocation was given by the Reverend George Olof Ekwall, Rector of Christ Church in Waltham, who in 1918 received the S.B. degree in chemical engineering from M.I.T.

The Commencement Address, given by John William Gardner, President of the Carnegie Corporation of New York, aimed to stimulate thinking on means by which we can enhance and further education of superior students while simultaneously providing suitable education at all levels for the advancement of those who, for one reason or another, find their maximum opportunities in fields not best served by universities. The Review is pleased to present Dr. Gardner's thoughts on page 495.

Upon conclusion of the Commencement Address, President Killian awarded the Goodwin Medal, together with certificate and check, to Thomas Greenway Stockham, Jr., '55, graduate student and Teaching Assistant in the Department of Electrical Engineering. Honorable Mention for the Goodwin Medal, named in honor of Harry M. Goodwin, '90, outstanding teacher and first Dean of the Graduate School, went to Jan List Boal, Teaching Assistant in the Department of Mathematics, and to George Arthur

Seated looking toward camera, left to right, are: Walter J. Beadle, '17, Mrs. W. J. Beadle, George Scatchard, Mrs. George Scatchard, Avery A. Ashdown, '24,* Mrs. W. E. Stanley, William E. Stanley,* Mrs. F. G. Fassett, Jr., F. G. Fassett, Jr., and Arthur L. Townsend, '13.* Those marked with asterisk become emeritus professors July 1. At right, D. P. Severance, '38, partly hides G. M. Roddy, '31, President-elect of the Alumni Association.*





Top brass at the Alumni Day luncheon included: D. Reid Weedon, Jr., '41, Mrs. H. E. Lobdell, H. E. Lobdell, '17, Mrs. D. Reid Weedon, Jr., Charles A. Chayne, '19, Mrs. Bryant Nichols, Clarence L. A. Wynd, '27, Mrs. C. A. Chayne, Bryant Nichols, '07, Leverett H. Cutten, '07, Mrs. C. L. A. Wynd, Thomas J. Watson, Jr., and Mrs. John J. Wilson. Other honored guests are at reserved tables, foreground.

Brown, '51, Assistant Professor of Mechanical Engineering. The Goodwin Medal is awarded in recognition of outstanding teaching on the part of young instructors who are continuing their education at the Institute.

Presentation of the degrees was made by President Killian. C. Richard Soderberg, '20, Dean of the School of Engineering, read the names of those receiving degrees in engineering, and George R. Harrison, Dean of the School of Science, read the names of those receiving science degrees. Harold L. Hazen, '24, Dean of the Graduate School, and John T. Norton, '18, Chairman of the Faculty, were Investors of the Hood for doctoral candidates.

After presentation of degrees, President Killian spoke briefly to the parents of the graduates, and Chancellor Stratton gave the charge to the graduates, which Review readers will find on page 496.

Commencement Luncheon

Upon completion of the commencement exercises, members of the graduating class, with families and friends, joined members of the Class of 1907, the Faculty and Administration at the President's luncheon under canvas in Du Pont Court. After a catered luncheon, President Killian made a few remarks addressed primarily to members of the Classes of 1957 and 1907.

President Killian observed that the luncheon provided opportunity to honor two classes — the Class of 1957, which now joins the ranks of Technology

Alumni, and the Class of 1907, which returns to M.I.T. for its 50-year reunion. The Class of 1907 provides inspiration, said Dr. Killian, for the graduating class to return to M.I.T. 50 years hence, in 2007.

In giving a salute to these two classes, President Killian envisioned them as symbolizing the wisdom of the older and more mature persons, and the enthusiasm and vigor of youth. In their reunion of the year 2007, the Class of 1957 will probably reminisce, as the Class of 1907 now does, about the difficulty of their studies at the Institute. But there is little of the "rah-rah" spirit about Technology Alumni; rather, said Dr. Killian, there is a sense of professional allegiance and mature fellowship that transcends the "old grad" concept.

In contrast to today, the Class of 1907 was graduated during a depression period. Yet, despite times of economic difficulty, members of this class have achieved high distinction in a wide variety of fields including statesmanship, politics, business, and administration, as well as in engineering and science. As an outstanding example of a member of the class who has achieved distinction in business, Dr. Killian introduced James M. Barker, '07, who spoke to the graduates for the Class of 1907.

On behalf of his Class, Mr. Barker thanked Dr. and Mrs. Killian for the part they were permitted to play in commencement activities. In preparing remarks for the occasion, Mr. Barker said he had tried to place himself in the state of mind his class would have been in had they been asked to listen to a member of the 50-year class when they received their degrees. Unfortunately this was not possible, for there was no Class of 1857; the Class of 1918 was the first class which had opportunity to listen to a 50-year class.

In speaking to the graduates Mr. Barker stressed the prime importance of a mastery of the use of English. A word is a symbol of a thought concept, and most thinking is done with word symbols which represent a shorthand way of thinking. The way words are assembled, said Mr. Barker, gives a clue to the thinking process of those who use words. Thus, if one's expressions tend to be vague and clumsy, there is more than a strong hint that that person's concepts are likely to be foggy and his thinking defective. The only person who is satisfied with vagueness, incom-

General view of portion of tables reserved for honored guests at the Alumni Day luncheon in the Great Court, June 10.





In reading order: John J. Wilson, '29, Mrs. James R. Killian, Jr., Alfred P. Sloan, Jr., '95 (hidden), Mrs. Karl T. Compton, Theodore T. Miller, '22, Mrs. J. A. Stratton, James B. Fisk, '31, Mrs. J. R. Zacharias, J. A. Stratton, '23, Mrs. T. T. Miller, Jerrold R. Zacharias, Mrs. J. B. Fisk, Arthur K. Hunt, '85, and Oscar E. Nutter, '87.

pleteness, or ambiguity, is one who is incompetent, for the man who uses language well is one who is clear in his thinking.

The humanities, too, provide an essential element in one's education. We know, said Mr. Barker, that the world does not progress through science and technology alone. Mr. Barker reminded his audience that Pascal said that it is better to know something about everything than it is to know everything about some one thing. When we see what progress is made in the world, we see that the prizes go to the men with broad and ranging minds. Those who have trained their minds well are interested in life and what life brings; they are not those who encounter boredom upon retirement.

Mr. Barker urged graduates continually to relate their immediate jobs to broader problems and to see the interrelationships and interlinks between the things that are important in the world. One who habitually develops this power of interrelating events will accelerate his progress. The world needs men who know significant relationships; these are the men who secure responsibility for broad planning programs which are usually the most interesting kind of work.

Mr. Barker indicated that he wished to share some of his conclusions on management with members of the Class of 1957. He pointed out that managing enterprises today is quite different from what it had been in the past and stated his own epigram: "We managers manage with the consent of the managed in this modern age. The manager who forgets that principle does so at the peril of his management career."

Most important of all the advice he could give, said Mr. Barker, was to urge graduates to master the basic principles of any operation in which they are engaged from the very first. It is easier to begin with an examination of details, but uncorrelated details without relation to basic principles provide no basis for evaluation. The man who continually deals only with details is lost in a maze of confusion.

As prime example of his meaning, Mr. Barker made reference to the autobiography of the elder Henry Cabot Lodge. In this book, Mr. Lodge speaks of the time when his education had reached the point that

he found keen pleasure and stimulation in using his mind. Today's graduates have made a good start in that direction, said Mr. Barker, but they have responsibility for continuing to develop their intellectual abilities. Finally, Mr. Barker concluded by wishing success to the Class of 1957.

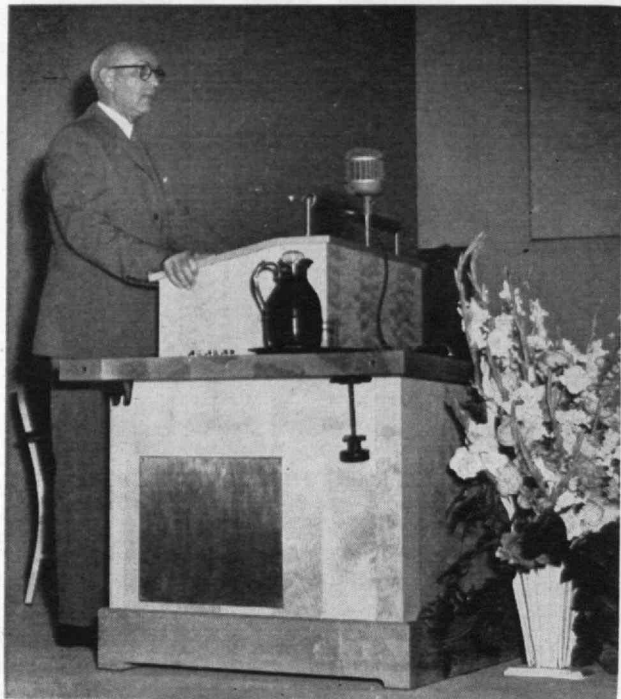
As Mr. Barker concluded, rain began to fall, and President Killian urged those at the outer edges of the tents in Du Pont Court to take adequate shelter. President Killian then introduced an eminent man of the Class of 1907 — Bryant Nichols — who took a brief bow amid enthusiastic applause. President Killian then called on Malcolm M. Jones, '57, who had made an outstanding record as an undergraduate, having been on the dean's list six out of eight terms, a member of Tau Beta Pi, president of his fraternity, and a member of the Ryer Housing Committee.

Mr. Jones addressed himself primarily to members of his class and their parents in presenting a brief statistical picture of the graduating class. He recalled that four years ago 803 students had entered as freshmen, but that this original group was reduced to 624 who finished their work and received degrees, so the mortality was about 22 per cent. Originally, members of the Class of 1957 came from every state in the Union except North Dakota, South Carolina, Arkansas, and Nevada. The Class had quite a few foreign students, most of whom came from Canada or South America.

The degrees awarded, said Mr. Jones, will indicate something of the range of interest which the class

Because it started to rain as the Commencement luncheon was concluded, the reception line was held indoors, adjacent to headquarters of the Department of Mechanical Engineering. Receiving are: President and Mrs. Killian, Chancellor and Mrs. Stratton, Dean and Mrs. Rule, Henry E. Salzhauer, '57, and Malcolm M. Jones, '57.





Marshall B. Dalton, '15, presents the Karl Taylor Compton Laboratories to President Killian at dedication ceremonies in Compton Hall, filled to capacity on Alumni Day.

had as undergraduates. As for the future, not all will go into engineering or science by any means. Something like 30 to 35 per cent of the students will continue graduate work. Many of this group will remain at M.I.T. but others will go to Harvard and more remote educational institutions throughout the country. Several will go directly into education, or will take graduate work in preparation for a career in teaching. Some will go into banking, or the medical profession, and others will enter military service. Quite a number will enter employment in foreign lands. While most of these will be employees of domestic firms having offices in foreign lands, some will enter the employ of foreign concerns. At least one member of the class plans to study theology with a view toward entering the ministry.

In conclusion, Mr. Jones stated he had personally gained a great deal while at M.I.T., and he felt sure his classmates felt the same way on this matter as well.

As final event of the luncheon program, President Killian introduced those guests who were retiring as of July 1. This group of 14 persons had given more than 400 man-years of service to the Institute, and President Killian took obvious pleasure and pride in calling on the following to rise: Avery A. Ashdown, '24, Arthur R. Davis, Walter C. Eberhard, '14, Herman Klugman, William H. McAdams, '17, George Scatchard, William E. Stanley, Arthur L. Townsend, '13, Charles M. Wareham, '16, Walter L. Whitehead, '13, Edward L. Cochrane, '20, John J. Rowlands, Olive Barnard, and Doris Peabody.

At the conclusion of these remarks, the luncheon was adjourned. Since it had begun to rain, President Killian announced that the reception line would be held in Building 3 near the headquarters of the Department of Mechanical Engineering. Greeting guests

on behalf of M.I.T. were President and Mrs. Killian, Chancellor and Mrs. Stratton, Dean and Mrs. Rule, Henry E. Salzhauer, President of the Class of 1957, and Malcolm M. Jones, President of the Institute Committee of the Class of 1957.

Class of 1932 Reunion

In recounting the events of Commencement and Alumni Day at the Institute, mention should also be made of the reunion of the Class of 1932. With Rolf Eliassen, '32, as chairman, the Reunion Committee planned for their quarter-century gathering to take place, for the most part, on the Tech campus. Baker House — now a student dormitory, but still an open field when the Class of 1932 were students — was the reunion headquarters where registration and social gathering were held on Saturday, June 8. Class picture, taken early on Saturday evening, was followed by reunion dinner at which the address of welcome was given by President Killian. As President of his Class, Thomas E. Sears, Jr., '32, conducted the business meeting in which Donald B. Gilman, '32, gave the Class Gift Committee report and Henry E. Worcester, Jr., '32, gave the report of the Nominating Committee.

On Sunday, Catholic and Protestant services were held in the M.I.T. Chapel, after which members of the 25-year Class took busses for Castle Hill, Ipswich, for a tour of the Crane estate. Those who wished could swim in the Atlantic, a New England shore dinner was provided, and late in the afternoon, busses brought classmates back to Baker House for buffet supper.

On Monday — Alumni Day — members of the Class of 1932 joined other Alumni in the events recorded below.

Alumni Day

Alumni Day — Monday, June 10 — was one of those delightful, warm, sunny, pleasant days James Russell Lowell wrote about in "the Vision of Sir Launfal." Something like 1,300 Alumni returned to Cambridge to take part in the morning symposium, to join in the luncheon at which President Killian gave his annual report, to witness the dedication of the new Karl Taylor Compton Laboratories, to visit the recently completed Computation Center and the nuclear reactor now under construction, to join with their classmates in a social hour on the green adjacent to Kresge Auditorium, to contribute to the good fellowship of the Alumni Day Banquet and finally, to conclude the day with a concert by the Boston Pops Orchestra conducted by Arthur Fiedler.

As they have done for more than a dozen years in the past, returning Alumni registered at booths set up in the lobby of Building 7. The first event of the day was the morning symposium at Kresge Auditorium. Here, with Chancellor J. A. Stratton, '23, presiding, two addresses were given on "Today's Science — Tomorrow's Promise." One of these, emphasizing progress in the communications and electronics fields was delivered by James B. Fisk, '31, Executive Vice-president of the Bell Telephone Laboratories. The second by Jerrold R. Zacharias, Professor of Physics,

reported progress on current studies aimed to devise new methods of teaching science, particularly at the high school level.

Those taking an active part in the symposium met in one of the rehearsal rooms of the Kresge Auditorium for informal social gathering — with coffee — prior to the presentation of addresses which occurred at 10:00 A.M.

In opening the symposium, Chancellor Stratton expressed pleasure at opening Alumni Day events. The somewhat serious tone of the morning symposium would be relieved by lighter fare in the evening. The symposium, said Dr. Stratton, has grown out of many years of experience in holding Departmental conferences, and later Regional Conferences, at which the aim was to bring to Alumni something of the progress being made in important areas of scientific and technological progress. These conferences represent one way in which M.I.T. can bring to Alumni recent progress in technology. The hope is to stimulate the audience, for too much occurs these days to expect that any significant progress in science education might be achieved in a single day.

Today, said Dr. Stratton, we have selected for discussion two topics close to the heart of the last President — Karl Taylor Compton — recent advances in the field of physics, and techniques for increasing the effectiveness of teaching methods for young people. Dr. Stratton then introduced James B. Fisk, '31, who spoke on the first of these topics. Dr. Fisk's able address will be found on page 497 of this issue of The Review. The second symposium address, by Professor Zacharias is presented for Review readers on page 501 of this issue.

Upon conclusion of the second address, Chancellor Stratton took opportunity to express the concern of the Institute's Faculty with development of the most effective possible means of instruction, especially at the undergraduate level. Although the Institute has received much publicity for the achievements it has made in research and because of the growth of its body of graduate students, the Faculty is keenly aware that its primary mission is to constantly improve the teaching of its undergraduates.

Alumni Day Luncheon

Upon conclusion of the symposium, Alumni gathered in Du Pont Court for the luncheon, under canvas, which has become a high point of the day's activities. As the majority of Alumni served themselves at a catered luncheon and gathered in congenial groups, a score of honored guests, along with more than 100 Alumni and wives who have passed their 50th reunion year, were served at tables specially reserved for them in the main court adjacent to Du Pont Court.

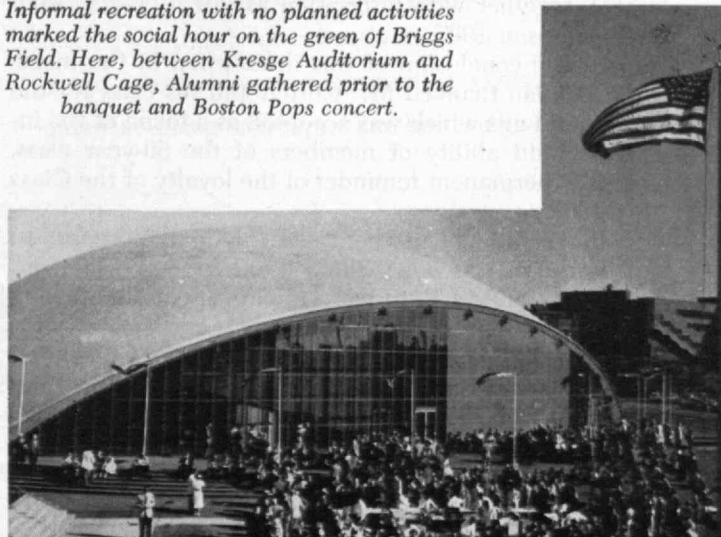
When the mid-day repast was finished, John J. Wilson, '29, Master of Ceremonies and Vice-president of the Alumni Association, opened the business portion of the affair. He was fortunate in being able to open his remarks with comments regarding an unusual gift which the Class of 1907 had made to M.I.T. — a ceremonial mace carried in commencement exercises on June 7 and officially presented on Alumni Day.

The idea of a mace for M.I.T. developed in 1952, said Mr. Wilson, at the 45th anniversary reunion of the Class of 1907. The Class welcomed this means of making a gift at their 50th anniversary and commissioned Leverett H. Cutten, '07, to design and make the mace. For years, Mr. Cutten had silversmithing as one of his hobbies and is accomplished in sculpturing and drawing as well as in silversmithing. He spent five years designing and planning the mace and, in the past year, has devoted his entire time to this project. The interest and enthusiasm with which Mr. Cutten embarked on this project was ably recorded by Mr. Wilson who read excerpts from letters Mr. Cutten had written to Bryant Nichols, Secretary, Class Agent, Reunion Chairman and Chairman, 50th Anniversary Gift Committee of the Class of 1907. Mr. Wilson also introduced President Killian who, after accepting the mace from Mr. Cutten, was scheduled to give his annual address. Mr. Wilson then asked President Killian and Mr. Cutten to take part in the mace presentation ceremonies.

In presenting the mace, Mr. Cutten remarked that this event could not have taken place 50 years ago, for the Class of 1907 had but very simple and meager commencement exercises, without caps and gowns. Mr. Cutten said he was first inspired to think of a mace for M.I.T. some years ago when he attended commencement exercises at Yale University where a mace was used in the commencement procession. In 1949, Mr. Cutten made a mace for Bates College and five years ago suggested that such a ceremonial symbol would be appropriate for the Class of 1907 gift to M.I.T. Originally, said Mr. Cutten, the mace was a war club with radial flanges at one end with coat of arms and pommel at the other, by which this weapon was grasped. Gradually, the mace became a weapon of guard and finally, a ceremonial symbol.

In describing the M.I.T. mace (illustrated on page 479), Mr. Cutten pointed out the beaver at the top of the head; below the head are three large knobs containing symbols of the work being carried on at the Institute. An open book, representing the humanities, the right-triangle of Euclidean geometry for mathematics, symbols of the atoms and Einstein's mass-energy equation for physics, doric columns for architecture, transit for civil engineering, two enmeshed gears for mechanical engineering, turbine blades for hydraulics, anchors for naval architecture and marine engineering, microscope for biology, coil and magnet

Informal recreation with no planned activities marked the social hour on the green of Briggs Field. Here, between Kresge Auditorium and Rockwell Cage, Alumni gathered prior to the banquet and Boston Pops concert.





Among the last events to take place at the Alumni Day banquet was the gracious acceptance by President Killian of gifts from the 25- and 50-year classes. At top, Bryant Nichols hands Dr. Killian check for the Class of 1907, while Thomas E. Sears, Jr., does likewise for the Class of 1932. At bottom, Theodore T. Miller, '22, turns over the reins of the Alumni Association to G. M. Roddy, '31, who becomes president July 1.

three fourths came from other sources. Dr. Killian announced that \$1,000,000 of the required \$3,750,000 had already been promised. Readers of *The Review* will find the full text of Dr. Killian's annual report on page 504 of this issue.

Mr. Wilson concluded the luncheon by announcing that the mace would be on display in Du Pont Court for the next several hours, and by calling attention to the next item on the day's program — the dedication of the Karl Taylor Compton Laboratories.

Dedication of Compton Laboratories

At 2:30, several hundred persons gathered at the Karl Taylor Compton Laboratories to dedicate new M.I.T. laboratory and teaching facilities. Vannevar Bush, '16, Chairman of the Corporation, opened the meeting which was so well attended that not all who came could be provided with seats. Dr. Bush reminded the audience that the dedication ceremonies were an occasion for joy as well as sadness. "We are saddened by the fact that a former president and beloved colleague is no longer in our midst," said Dr. Bush, "but we can rejoice in the knowledge that the kind of building being dedicated is just the type which Dr. Compton himself would want to see rise at the Institute."

In presenting the new facilities to M.I.T., Marshall B. Dalton, '15, recalled the origin of the Compton Laboratories. President Compton had made tremendous contributions in building M.I.T. pre-eminence in physics, and especially in electronics and nuclear science. But despite his great contributions, no permanent structure existed as a reminder of Dr. Compton's service. The inspiration for a laboratory of nuclear science and electronics to honor Dr. Compton came from Alfred P. Sloan, Jr., '95. It was Mr. Sloan's encouragement and generosity, aided by that of the Corporation, that made the new laboratories possible. Mr. Dalton then presented the new buildings to Dr. Killian as a memorial to Karl Taylor Compton.

Dr. Killian remarked that the occasion was one for celebration, tribute, and appreciation. The need for laboratories such as were dedicated on June 10, was clear a decade ago, but no means were then available for building the necessary structures, which will be shared by both the Research Laboratory of Electronics and the Laboratory for Nuclear Science. Dr. Killian reminded the audience that the Research Laboratory of Electronics was an outgrowth of the war-time Radiation Laboratory which, under the direction of Dr. J. A. Stratton, '23, and later J. B. Wiesner, has carried out in peacetime many important research projects similar to those conducted by the Radiation Laboratory during World War II. The Nuclear Science Laboratory is a new postwar activity and is not an outgrowth of earlier war-time facilities at M.I.T. Under the direction of Jerrold R. Zacharias and now Martin Deutsch, '37, first-rate

(Continued on page 518)

for electrical engineering, and wing section for aeronautics were cited as symbols engraved on this part of the mace. At the lower end, said Mr. Cutten, is a sphere with acorn and oak leaves, and the M.I.T. seal, together with inscription as gift to M.I.T. from the Class of 1907.

At the conclusion of this description of the mace, Dr. Killian thanked Mr. Cutten and his class for the splendid gift which was accepted as a token of the interest and ability of members of the 50-year class, and as permanent reminder of the loyalty of the Class of 1907.

President Killian then gave his annual report to Alumni. In this, Dr. Killian listed ten important objectives for M.I.T. to work toward in the immediate future. In emphasizing the need for raising funds for endowing Faculty salaries, he announced that a fund for \$5,000,000 was being raised for this purpose, and that Alfred P. Sloan, Jr., '95, had agreed to underwrite one fourth this amount provided the remaining

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CARDINAL AND GRAY

(Continued from page 516)

work in the field of nuclear science is being undertaken. Both laboratories which will occupy the new building have the whole-hearted support of the nation's Armed services.

There is appreciation on the part of the Faculty and students, said Dr. Killian, for the financial aid that has come from Alumni and industry. Alumni have furnished two rooms in the Laboratories — the John Picker Kolker Room was given by Leon A. Kolker, '31, in memory of his son. The other room was donated by George E. Merryweather, '34, in the name of his Cleveland firm, the Motch and Merryweather Machine Company. Substantial support has also come from Du Pont, Webster, and Kresge Foundations. Special salute and thanks were given to Alfred P. Sloan, Jr., '95, whose gift of \$1,000,000 was exceeded by the many contributions in the thought and energy he gave to the building.

The laboratory does contain one facility not fully envisioned when plans for the Compton Laboratories were begun — a new center of computation. Philip M. Morse, Professor of Physics, recognized the Institute's needs for such a research center and urged M.I.T. to work toward the establishment of new computational facilities of the type represented by the differential analyzer and the Whirlwind digital computer developed at the Institute. President Killian was pleased to report that M.I.T. had found generous friends

when in need, and a discussion of the Institute's aims, with Thomas J. Watson, Jr., President of International Business Machines, Inc., led to the I.B.M. grant of a 704 computer.

As for the building itself, it represents a nine-million-dollar tribute to Karl Taylor Compton. Many of the Institute's Faculty have had a hand in planning it, and Dr. Killian singled out for special mention, Gordon S. Brown, '31, Head of the Department of Electrical Engineering; Nathaniel H. Frank, '23, Head of the Department of Physics; George G. Harvey, Henry J. Zimmermann, '42, Peter T. Demos, '51, Frederic J. Eppling, '47, Frank M. Verzuh, '46, among others. The building was constructed by Skidmore, Owings and Merrill, and Gordon Bunshaft, '33, of that organization played a most helpful role in its design. Dr. Killian expressed appreciation for all who have helped to build the new facilities, and the building was accepted as a means of furthering the aims and objectives of the professional life of Karl Taylor Compton.

Dr. Bush then introduced Thomas J. Watson, Jr., President of I.B.M.

Mr. Watson, a member of the M.I.T. Corporation, said he and his firm were proud to be associated with M.I.T. and the Compton Laboratories, although he regarded I.B.M.'s contribution as a small one. Even complex machines, said Mr. Watson, are merely tools of men to be used by men in their creative work. The machines have no inherent creative ability. But they

(Continued on page 520)


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Of primary importance for good systems management is the philosophy underlying the selection of the supervisory personnel. The head of a technical activity should, first of all, be a competent scientist or engineer. A common mistake — nearly always fatal in systems work — is to fill such positions by non-technical men who have been trained only in management techniques. In the highly complex activities of major systems work, what is required is *technical management*, and of the two words, the word *technical* must never be overlooked.

In the selection of scientists and engineers for technical management, it is essential that the men chosen be broad in their training and approach. Each principal department head, for example, must have a good basic understanding of the technical facts of life of the other departments. When these people get

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CARDINAL AND GRAY

(Continued from page 518)

can increase the creative capacity of men who use them, and free the human mind for engaging in original thinking.

Mr. Watson regarded the new computation center as representing a new relation between industry and the university. He paid tribute to the development, at M.I.T., of the magnetic memory core which forms an important element of modern computers. But just as industry turned to the colleges for the memory core, it also turns to the colleges and universities for people as well as for ideas.

Finally, as principal speaker at the dedication ceremonies, George R. Harrison made the dedication address which will appear in the November issue of *The Review* with a description of the laboratories.

Upon conclusion of Dean Harrison's address, visitors filed to the new computation center where Philip M. Morse, Professor of Physics, spoke on the uses to which the I.B.M. computer would be put. Dr. Morse presented to Mr. Watson a copy of the first year's report of the computation laboratory, and Mr. Watson then pushed a button which officially placed the computer into operation for its intended educational and research purposes.

Nuclear Reactor

Those who wished, had opportunity to visit the M.I.T. nuclear reactor now under construction on

Albany Street, west of Massachusetts Avenue in an industrial section of Cambridge adjacent to the main M.I.T. buildings. Those who made this interesting trip had opportunity to hear Manson Benedict, '32, Professor of Nuclear Engineering, report on the purpose and use of the reactor, and also its general method of construction.

Social Hour

Between 5:00 and 6:00 P.M., Alumni with their relatives, friends, and classmates, had opportunity to spend a pleasant hour in the sun on the green of Briggs Field between Kresge Auditorium and the Rockwell Cage, free of speeches or other planned activities.

Alumni Banquet

At 6:00 P.M., some 1,300 Alumni entered Rockwell Cage for the Alumni Banquet which has always been a highlight of Alumni Day. A steak dinner, catered by Seiler, was served amid pleasant conversation.

At 7:00 P.M., Theodore T. Miller, '22, conducted the brief business affairs of the evening. He called upon E. P. Brooks, '17, Dean of the School of Industrial Management, to conduct Miss Olive Barnard to the stage for induction as an honorary member of the M.I.T. Alumni Association. Miss Barnard retires from her post as administrative assistant in the School of Industrial Management after many years of close as-

(Continued on page 522)

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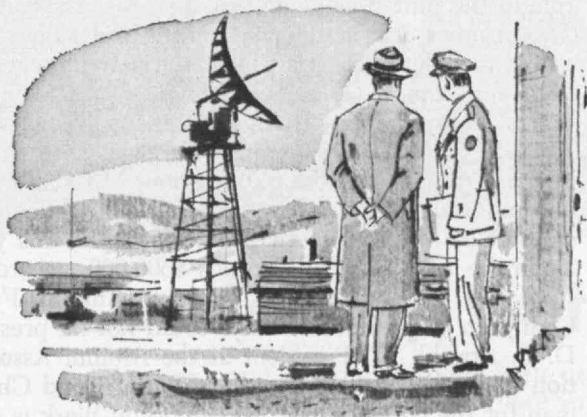
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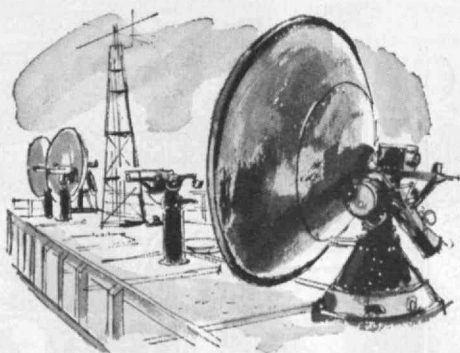
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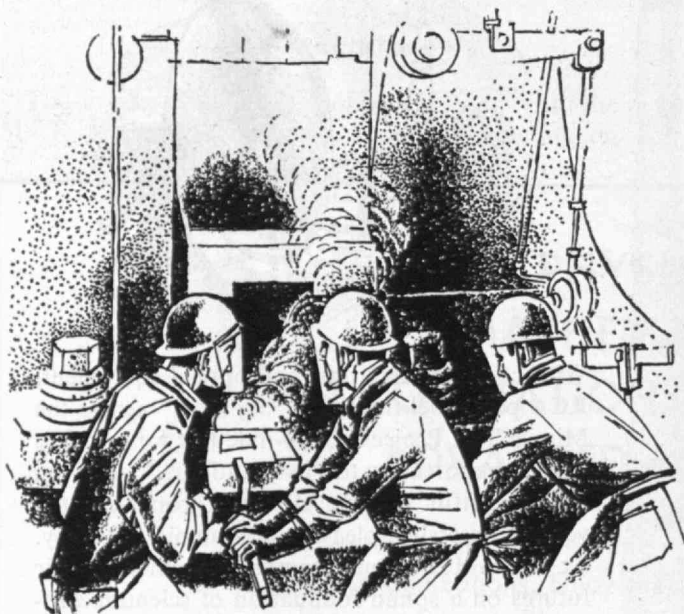
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CARDINAL AND GRAY

(Continued from page 520)

sociation with Professor Erwin H. Schell, '12, and students of Course XV. Mr. Miller, himself a graduate of Course XV, took obvious pride and pleasure in handing Miss Barnard her certificate of membership and in recalling her extraordinary ability to remember faces and names of former Course XV students.

Class gifts totalling \$110,000 were then presented to President Killian. Thomas E. Sears, Jr., President of the Class of 1932, presented a check for \$45,000 from the 25-year class. Bryant Nichols, President, Secretary, Class Agent, Reunion Chairman, and Chairman of the 50th Anniversary Gift Committee of the Class of 1907, made the presentation of \$65,516.30 on behalf of the 50-year Class, in verse.

In his gracious acceptance of these Class gifts, President Killian reminded the audience that both classes had graduated during periods of financial depression. Yet, they had managed to make their own high marks in the world despite the difficulties of the periods in which they were graduated.

Mr. Miller then briefly summarized some of the Alumni activities in which he had played a major role in the past year as president of the Association. The Alumni Association, said Mr. Miller, has engaged in at least five major fields of activity, each of high importance. (1) It helps develop and maintain bonds of loyalty and friendship among Technology Alumni. (2) It serves an important purpose in informing Alumni and the public about M.I.T. (3) It is an important and active element in the financial support of M.I.T. objectives. For example, this year again the Alumni Fund exceeds \$500,000, according to Avery H. Stanton, '25, retiring Alumni Fund Chairman who, unfortunately, could not be present. D. C. Arnold, '27, President of the Alumni Association in 1955-1956, will serve as Alumni Fund Chairman for the coming year. (4) Important work is also done by members of the Alumni Council at their meetings on the last Monday of the month during the school year, and by those who serve as Honorary Secretaries and Educational Counselors. (5) Finally, Alumni participate actively in the management of M.I.T. itself through serving on the M.I.T. Corporation. Of 60 members of the Corporation, 30 Life Members and 15 Term Members are M.I.T. Alumni.

In conclusion, Mr. Miller acknowledged the effective support he had received during the past year from officers of the Alumni Association, singling out H. E. Lobdell, '17, D. P. Severance, '38, H. B. Kane, '24, and J. E. Conrad, for mention. He then introduced Gilbert M. Roddy, '31, who will be president of the Association beginning July 1, 1957.

Mr. Roddy expressed appreciation at his election to this important post, paid tribute to D. Reid Weedon, Jr., '41, who had been general chairman of Alumni Day, and made two brief announcements. The first was that the evening event, at which Alumni would attend a Boston Pops Concert, represented the first telecasting of this well-known concert; it could be seen and heard on TV Channel 2 from WGBH-TV. The second was that, although attendance exceeded

(Concluded on page 524)



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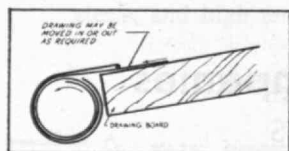


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CARDINAL AND GRAY

(Concluded from page 522)

all expectations, ample seating would be available for all who held banquet tickets. Additional seating space for others would also be available in the Little Theatre of Kresge Auditorium for "The Pops."

Boston Pops Concert

Arthur Fiedler, Conductor, and the Boston Pops Orchestra staged a magnificent performance in Kresge Auditorium the evening of Alumni Day. Every seat in the house was a good one, and some Alumni had their first opportunity to witness the unusual visual and acoustic properties of the comparatively new structure. The program for "M.I.T. Night at the Pops" was an unusually good one too, in three parts.

The first part of the program included the Polonaise from "Eugene Onegin," by Tchaikovsky; Suite from "Peer Gynt," by Grieg; Air on the G-String, by Bach-Wilhelmj; and Academic Festival Overture, by Brahms, as well as several encores.

The second part of the program featured Tana Bawden, soloist, in the Piano Concerto in A Minor, Op. 54, by Schumann, with brilliant performance by pianist and orchestra alike; and the España, Rhapsody, by Chabrier.

The final portion of the program included selections from "My Fair Lady," by Loewe; "Moonglow" and Theme from "Picnic" arranged by Hayman, The Stars and Stripes Forever, by Sousa, and — as a fitting conclusion — the Stein Song by Frederic F. Bullard, '87.

Conclusion

This year's events mark the thirteenth Alumni Day and the fourteenth Commencement exercises to be recorded since April, 1945, by The Review's ninth editor. During the past dozen years the pattern of Commencement ceremonies has not changed appreciably, although the economic and military problems confronting today's graduates are quite different from those of June, 1945. The events of Alumni Day have gone through a number of changes, however. The steins and bottled beer are gone from the banquet, but then, so are the speeches.

This year's events were marked by a somewhat greater degree of pageantry than usual; they also had a maturity and quality not always found in Alumni gatherings. The presentation of the mace injected a bit of medieval tradition into the exercises of a very modern educational institution, and the concert performance of the Boston Pops Orchestra provided a very welcome innovation for concluding Alumni Day. If Alumni left Cambridge empty-handed, they could do so with pride and dignity.

The symposiums emphasized advances in physics and educational methods of teaching science. The dedication ceremonies of new laboratories for M.I.T. again called attention to the theme of science and education. In a very real sense, therefore, Alumni Day, 1957, could be regarded as Karl Taylor Compton Day for the cardinal and gray.

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is the fact that all have long been active in a very specialized phase of industrial operations, namely, direct and correlated problems associated with Engineered Atmospheres, a phase not to be confused with conventional 'air conditioning'. Operations such as drying, baking, curing, coating, laminating and other treatments of this character require that the 'atmosphere' surrounding the products during the operation — the processing conditions — must be carefully predetermined and then precisely created and maintained.

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J. O. ROSS ENGINEERING CORPORATION, New York, N. Y. The company was founded in 1921 by John O. Ross who prior to that year had spent his entire business career in the design and manufacture of fans, blowers and other units and systems for moving and controlling air. From its inception, the J. O. Ross Engineering Corporation has served industry on a broader basis than in the mere handling of air. Over the years, Ross Engineers have worked on targets which logically could be termed "Engineered Atmospheres"...that is, atmospheres which are predetermined and then created to provide the best possible conditions for processing paper, plastics, textiles, metals, and the many other materials that require baking, curing, drying, treating, cooling, painting or other treatment.

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ROSS ENGINEERING OF CANADA, LIMITED, Montreal, Can. A Canadian company serving Canadian industries since 1923, this company's work parallels that of J. O. Ross Engineering in the United States. In the fields of paper, plastics, rubber, textiles, metal-fabricating, foundries, Ross of Canada designs and constructs systems and units for providing the necessary "Engineered Atmospheres" for many of the processing steps in these industries.

ROSS MIDWEST FULTON CORPORATION, Dayton, Ohio. Particularly in connection with drying systems on paper machines, etc., there is generally a need for automatic temperature control of the heating surface and for positive drainage of condensate; auxiliary items such as separators, heat exchangers, sight-flow indicators, syphons, traps, etc., are necessary adjuncts. Ross Midwest Fulton has specialized in these engineered systems since 1926 and to date the majority of paper machines in the U. S. A. and Canada operate with their equipment.

CARRIER-ROSS ENGINEERING COMPANY, LIMITED, London. Established in the early 1920's Carrier-Ross serves industry in England and on the Continent in the field of Engineered Atmospheres very much as the Ross companies in New York and Montreal serve the United States and Canada, respectively. Completely staffed with competent engineers and with excellent manufacturing facilities, Carrier-Ross is in position to aid all members of the group, particularly in overall planning where interest in a project is held jointly by parties in the States and/or Canada and England.

JOHN WALDRON CORPORATION, New Brunswick, N. J. Waldron is one of the oldest continuing businesses in the country, being founded in 1827 by William Waldron. It has always been in the specialized field of web-processing. Starting with paper and later rubber and plastics, Waldron Engineers have designed and constructed machinery for coating, laminating, embossing, saturating, printing 'webs' of material such as paper, plastics and textiles. Frequently, Waldron Engineers and Ross Engineers work together on problems where Ross units condition the material and Waldron units do the converting. Web-Processing is the work of the Machinery Division and while most of the work in the past has been in the industries referred to above, Waldron equipment is now going into other new fields such as metal drums, plastic tubes and packaging. Another Waldron division manufactures flexible couplings which find wide use in the field of power transmission.

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TREND OF AFFAIRS (Continued from page 490)

Visiting Committee Report on Geology and Geophysics

■ The Visiting Committee on the Department of Geology and Geophysics* met in Cambridge on Tuesday, December 4, 1956, with the following members present: Messrs. Beadle, Desmond, Lord, Sherry, and Silverman. The following members of the Department and Administration met with the Committee for all or part of the discussions: Francis Bitter and George R. Harrison, Associate Dean and Dean, respectively, of the School of Science; Robert M. Kimball, '33, Secretary of the Institute; Robert R. Shrock, Head of the Department, and J. A. Stratton, '23, Chancellor. Messrs. Bannerman, Clewell, Gershinowitz, and Green of the Committee were unable to attend.

The Committee recommends that the Executive Committee:

1. Approve the appointment of four new professional staff members in 1957, or as soon thereafter as they can be found or trained, to bring the departmental staff to 20, the number mentioned in last year's Visiting Committee Report as "optimum to achieve the proper diversity and depth."

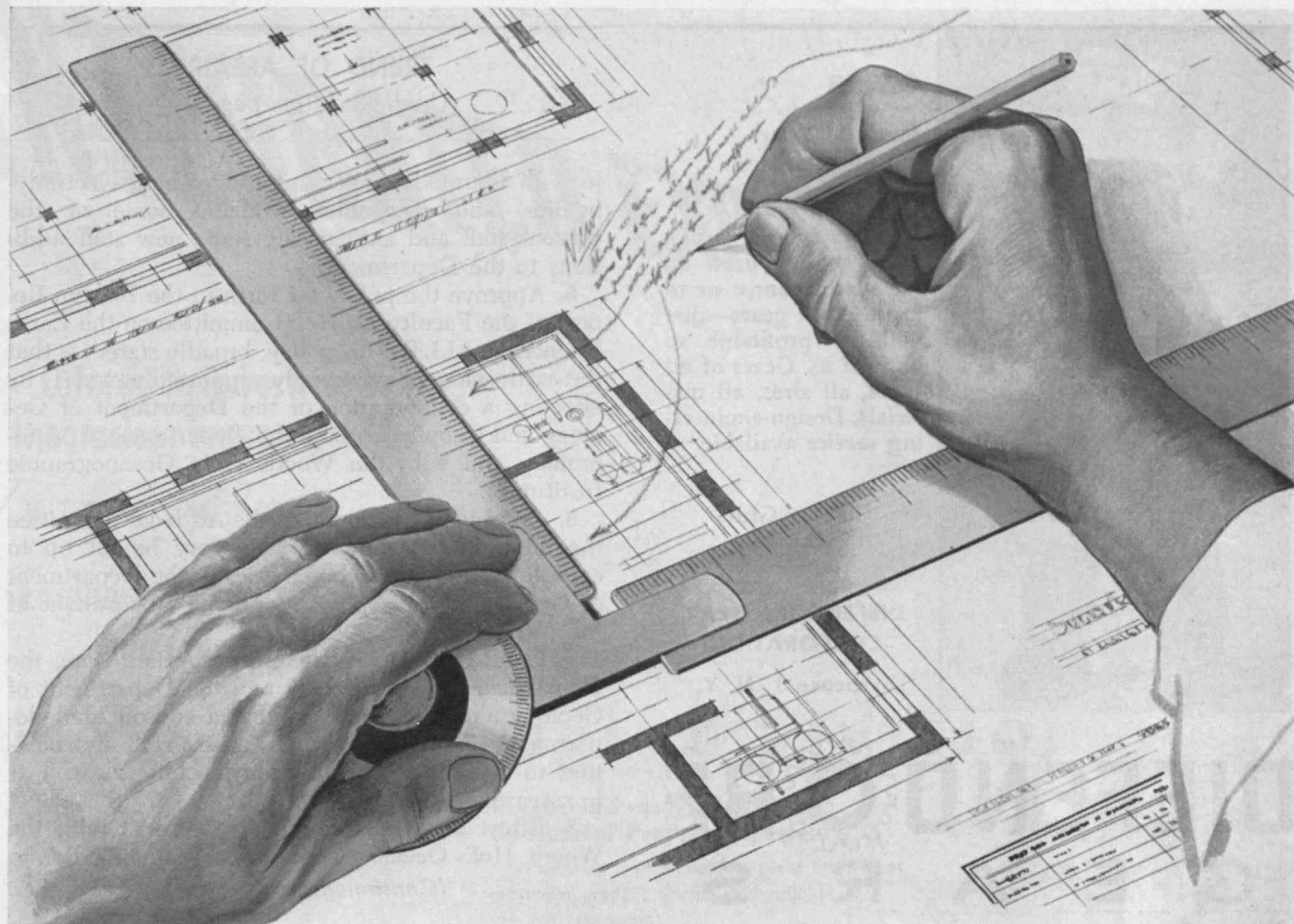
2. Approve continuance of the four year-five year curriculum in Course XII put into operation this fall for the purpose of offering a more fundamental and broader course of study, with such minor alterations as may be necessary to make it serve more effectively as a training course for students who may wish to continue graduate work in the earth sciences.

3. Give sympathetic consideration, within the recognized budgetary and space limitations, to the following needs of the Department: (a) adequate space for present and future staff including office and laboratory space, classrooms, and seminar rooms; (b) adequate library facilities in the departmental area; (c) a commons room for undergraduates; (d) budgetary support for a second instrument maker; (e) budgetary support for additional efforts to get more undergraduate and graduate students interested in going into the earth sciences.

4. Approve the Department's present and proposed future educational experiments which are designed to create and maintain interest in the earth sciences, specifically: (a) freshman elective subjects in earth science and astronomy, respectively; (b) undergraduate lecture subject in physical oceanography (offered by members of the Woods Hole Oceanographic Institution staff); biweekly departmental seminar; (c) biweekly earth science colloquium (with distinguished speakers, generally from outside the Cambridge area); (d) future subjects as follows: (1) second year subject in earth physics; (2) fourth year graduate sub-

(Continued on page 528)

*Members of this Committee for 1956-1957 are: Walter J. Beadle, '17, chairman, Thomas C. Desmond, '09, William J. Sherry, '21, Cecil H. Green, '23, Daniel Silverman, '29, Dayton H. Clewell, '33, Clifford S. Lord, '37, Harold M. Bannerman, and Harold Gershinowitz.



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TREND OF AFFAIRS

(Continued from page 526)

jects in thermodynamics, hydrodynamics, electro-dynamics, and mechanics, utilizing some of the present staff and anticipating some new staff additions to the Department.

5. Approve the policy set forth in the Interim Report of the Faculty *Ad Hoc* Committee on the Earth Sciences at M.I.T. This policy, broadly stated, is that the earth sciences be strongly supported at M.I.T. by effecting a collaboration of the Department of Geology and Geophysics with the Department of Meteorology and with the Woods Hole Oceanographic Institution.

6. Approve the proposal of the *Ad Hoc* Committee that an interdepartmental laboratory be set up to consolidate the research activities of the Department of Geology and Geophysics and the Department of Meteorology.

7. Consider merging, at an appropriate time, the Department of Meteorology and the Department of Geology and Geophysics so that a consolidated departmental administration can utilize staff and facilities to maximum advantage in teaching as well as in research.

8. Effect a closer working arrangement with the Woods Hole Oceanographic Institution in order to

(Continued on page 530)

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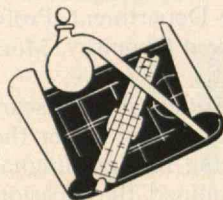
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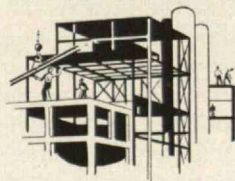
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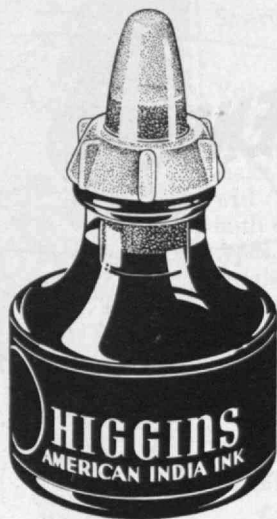
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TREND OF AFFAIRS

(Continued from page 528)

utilize its facilities for oceanography instead of attempting to duplicate such facilities.

These recommendations are evidence that the Committee is well impressed by what the Department has accomplished in the evolution of its educational program.

The report of the Visiting Committee was approved for publication in *The Review* at the meeting of the Executive Committee of the Institute on April 5.

Visiting Committee Report on Modern Languages

■ A wide range of topics was discussed by the members of the Visiting Committee on the Department of Modern Languages who met on March 21, 1956.* Committee members present were Messrs. Berke, Bond, Raymond, Twaddell, and Chairman Desmond. John E. Burchard, '23, Dean of the School of Humanities and Social Studies, and Paul M. Chalmers, Adviser to Foreign Students, were present and represented the Administration. In addition, the following members of the Department were also in attendance: William N. Locke, Head of the Department, Professors Joseph R. Applegate, A. Noam Chomsky, Morris Halle, James S. Tassie, and Victor H. Yngve.

Members of the Department described research and teaching activities being conducted under their direction, the purpose of teaching foreign language at the Institute was carefully examined, the occasional need to give a small group of foreign students a better grasp of English was discussed, and the place of foreign language work in the Humanities program was reviewed.

Students taking language courses at the Institute differ in their aims and, correspondingly, different types of courses are given. Graduate students wish to learn to read technical literature in their field. Literature and humanities courses appeal to those with broader interests and some knowledge of the language. Elementary language is taught for those who wish to begin to get the feel of a foreign language and culture. Subjects in spoken French and spoken German help provide ability in speaking. Linguistics courses attract those who want to make a study of the structure or the uses of language as a medium of communication.

Only undergraduates in Courses in Chemistry and in Mathematics are required, at the present time, to take a foreign language at the Institute. Almost all undergraduates taking language courses do so because they have a personal desire to acquire polylingual ability, not because it is required. Extracurricular activities, conducted in a foreign language, have been shown to be valuable as a supplement to classroom

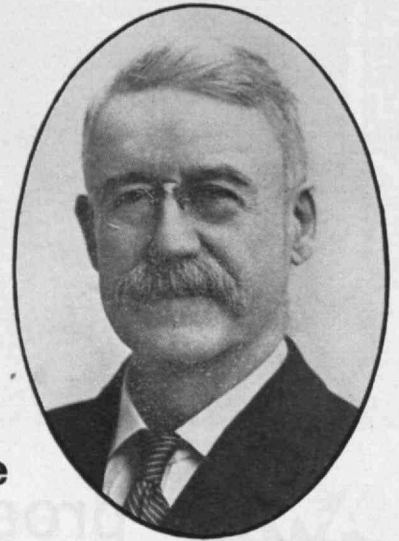
(Continued on page 534)

*Members of this Committee for 1955-1956 were: John J. Desmond, Jr., chairman, B. Edwin Hutchinson, '09, Samuel Berke, '15, Antonio H. Rodriguez, '21, Horatio L. Bond, '23, Jean M. Raymond, '34, Franklin S. Cooper, '36, Elton Hocking, and W. Freeman Twaddell.

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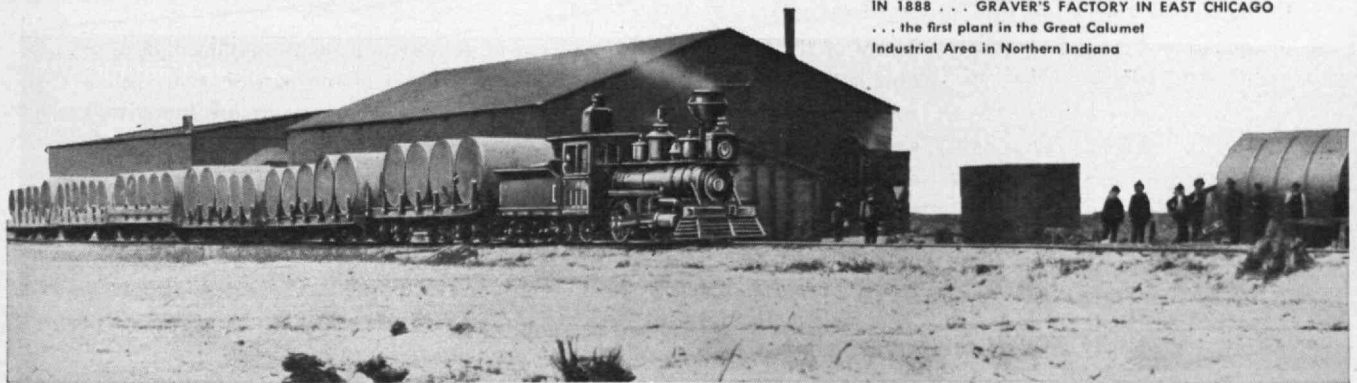
“... It had been the theory of Chicago tank builders that tanks should be constructed like boilers—made of heavy material and capable of standing a great pressure. Mr. Graver could erect his tanks much cheaper than those being put up by the Chicago concerns, but he was unable to get his just share of the business. He took contracts for other kind of work and his perseverance was finally rewarded by a contract to build four linseed tanks of considerable size for a Chicago concern. Failure was predicted by his competitors and Joseph T. Ryerson, from whom he was purchasing the material, also became skeptical of the outcome.

Having called Mr. Graver into conference and being assured that he had successfully constructed the lighter tanks for the Standard Oil Company, Mr. Ryerson gave the oil com-

pany his word that the tanks would fill all requirements and Mr. Graver was allowed to go on with the contract. William Graver, his son, J. P. Graver, now president of the company and Mike Sheets, the construction foreman, got the material out for the tank at their plant in Clark street.

The tank trade was especially interested in the construction of the tanks and they gathered daily to watch the erection. Gloomy predictions were voiced from the laying of the bottoms to the completion of the tanks. However, William Graver had his day when the first tank was tested out. A large crowd was on hand to see the tank filled up, and as the gauge on the tank soared and it still held, many of his competitors turned on their heels, wiser apparently in tank construction.

It was upon the completion of this tank that William Graver began to reap the fruit of his labor. Orders came pouring in and from that day to this the Gravers have been favored with a large share of the tank business.”



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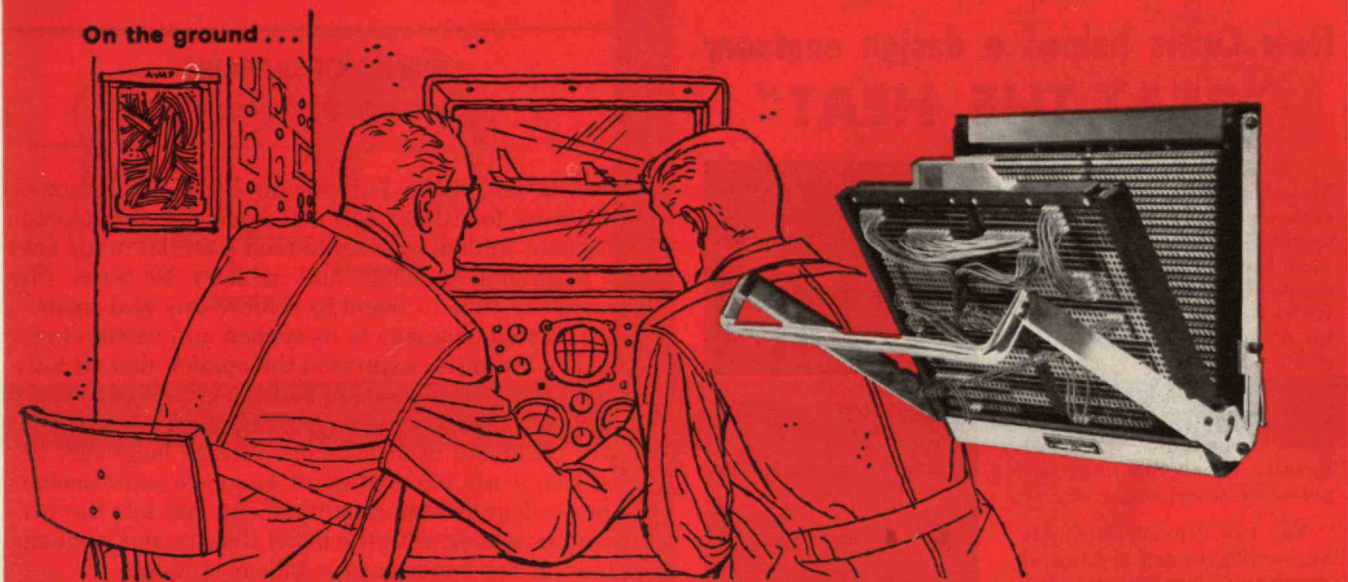
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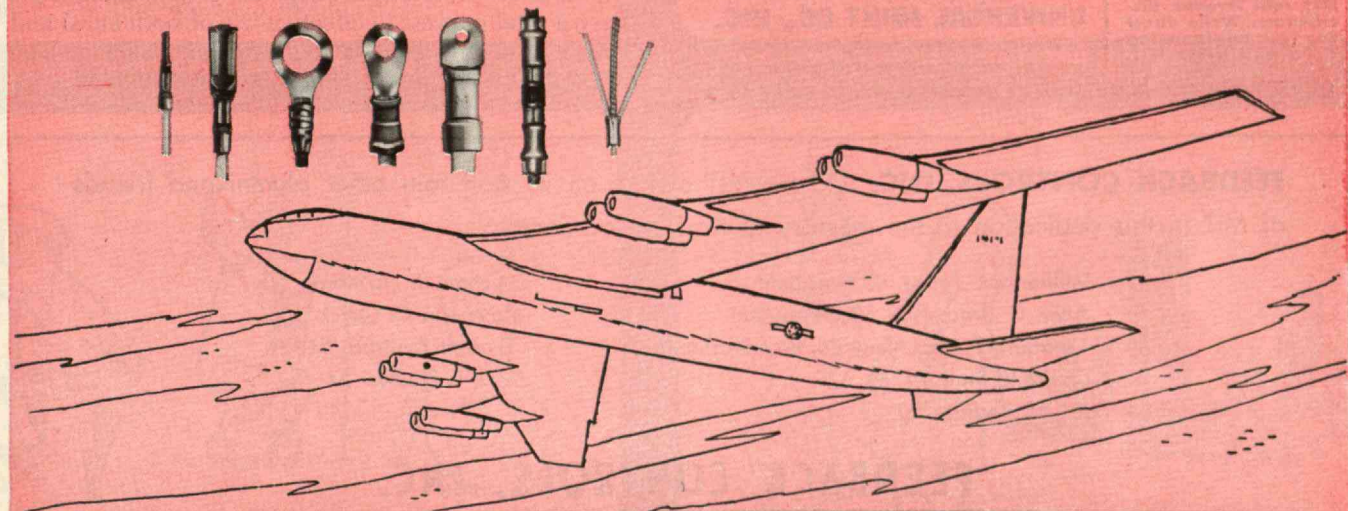
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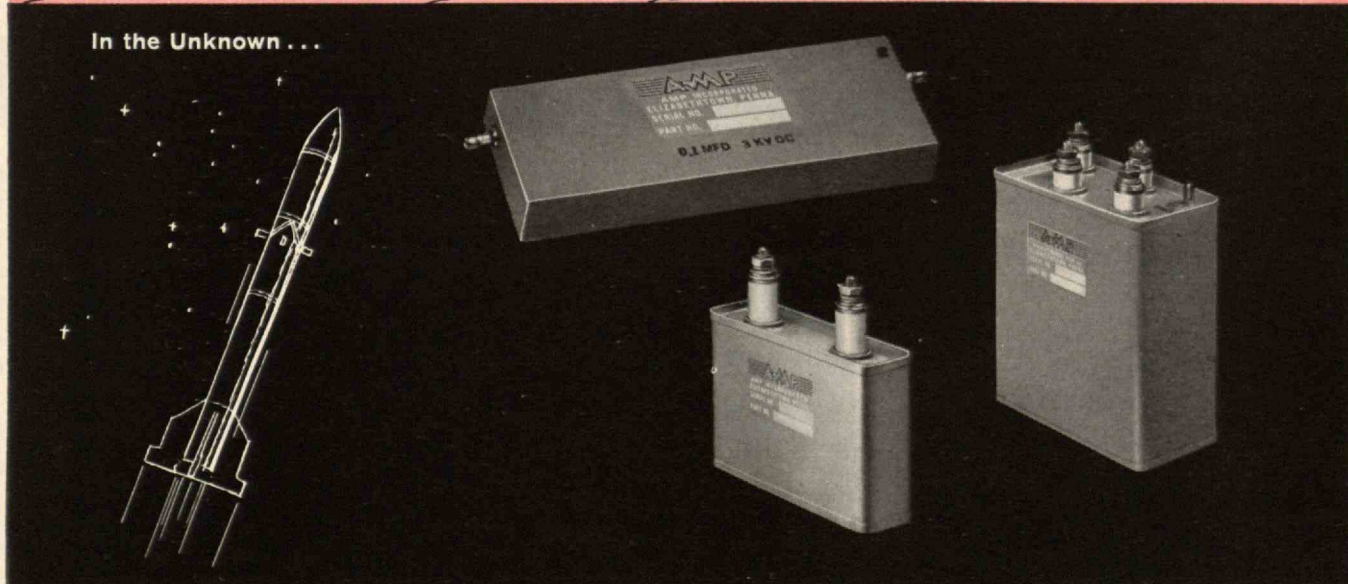


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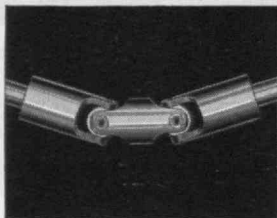
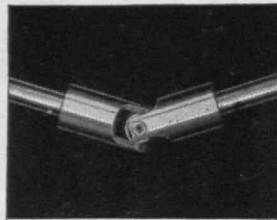


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TREND OF AFFAIRS (Continued from page 530)

work in languages, but can rarely be a satisfactory substitute for it. It takes 150 hours for the average graduate student to learn to read material in his field in a foreign language and at least 10 times that amount of time to begin to achieve any real mastery of a foreign language in its spoken and written form.

The Committee expressed the opinion that an institution of higher education ought not to have to teach elementary language. Every educated man should have command of at least one foreign language, but too frequently elimination of language requirements from college entrance requirements has left the preparatory schools with the belief that foreign language ability is not important for college students.

In a few instances foreign students who come to study at the Institute have difficulties in keeping up with their studies because they are not sufficiently familiar with English. Although only a few such cases appear each year, it was suggested that an elective course in spoken English for foreign students could be established. (Such a course has since been approved by an appropriate Faculty Committee.)

Members of the Department of Modern Languages have a vital interest in effective use of both aural and visual instrumental aids to language teaching. The

(Continued on page 536)

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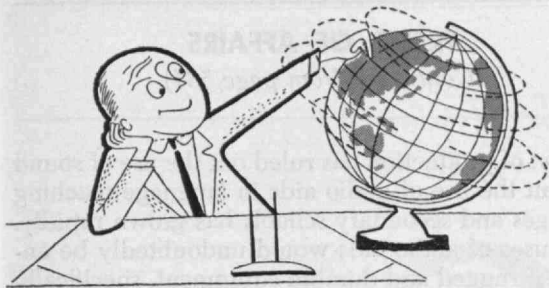
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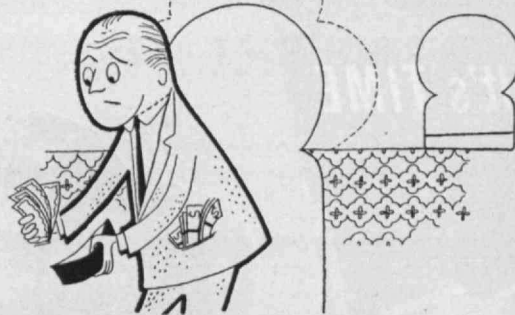
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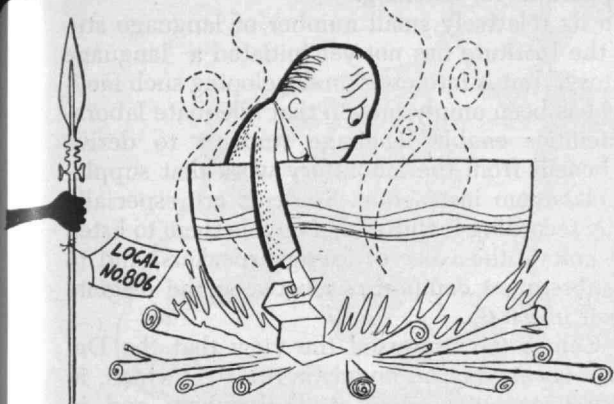


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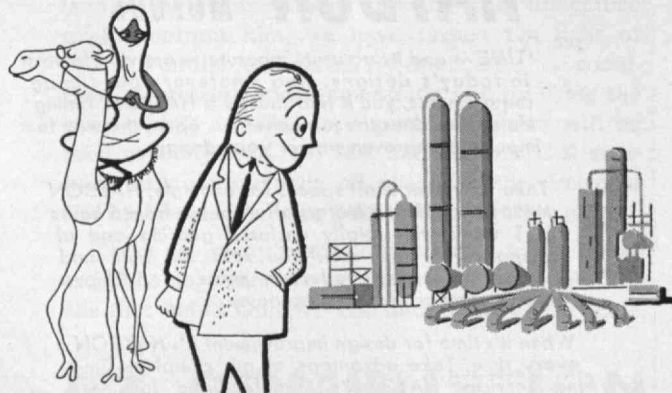
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TREND OF AFFAIRS

(Continued from page 534)

high cost of production has ruled out the use of sound films, but the use of audio aids in language teaching in colleges and secondary schools has grown rapidly. School uses of audio aids would undoubtedly be enhanced if rugged and durable equipment, specifically designed for school use, were made available at prices intermediate between that of home and professional equipment. Efforts are being made to interest engineers and manufacturers in the development of suitable apparatus for teaching.

With its relatively small number of language students, the Institute has not yet initiated a "language laboratory," but is interested in developing such facilities. It has been amply proven that adequate laboratory facilities enable language students to derive much benefit from the laboratory work that supplements classroom instruction. Students are especially aided by recording facilities that enable them to listen to and imitate the voice of foreign speakers, and to make subsequent comparisons between the original and their imitation.

The Committee expressed the view that the Department is carrying on linguistic research which, in some cases, cannot be done at all elsewhere, and, in other cases, is conducting language research more efficiently than is being done elsewhere. The Committee reaffirms its 1955 recommendations that: (a) competence in at least one foreign language be required of every candidate for an M.I.T. degree; and (b) an admission language requirement be considered to encourage students to get that competence before entering, such a requirement to be put into effect gradually, giving secondary schools sufficient notice to prepare their students for it. The Committee suggests investigating the possibility of a freshman elective in spoken English for foreign students, such a course to be offered by members of the Department's staff. Finally, it is the Committee's hope that a "language laboratory" may soon be provided to aid in the development of spoken language proficiency.

After review by the Executive Committee in August and by the Corporation on October 1, 1956, the report of the Visiting Committee was submitted for publication in The Review on October 25, 1956.

Visiting Committee Report on Civil and Sanitary Engineering

■ The Visiting Committee on the Department of Civil and Sanitary Engineering met on Sunday, April 8, and Monday, April 9, 1956, at the Institute. Present at this meeting were: William V. McMenimen, '03, Horatio L. Bond, '23, Alfred E. Perlman, '23, and Alfred T. Glassett, '20, chairman.* Present from the

(Continued on page 538)

*Members of this Committee for 1955-1956 were: Alfred T. Glassett, '20, chairman, William V. McMenimen, '03, Clarence D. Howe, '07, Horatio L. Bond, '23, Alfred E. Perlman, '23, Philip C. Rutledge, '33, Wesley W. Horner, Frank D. Merrill (deceased), Hartley Rowe, and General James H. Stratton.

From Lilliput to Brobdingnag—

Via Research

Gulliver, with considerable aplomb, blithely traveled through the never-never land of giants as tall as church steeples and through the land of the little people, six inches tall. In these strange lands he unwittingly, but consistently, came a cropper.

As boiler makers, we too are confronted with strange lands. Boiler pressures have reached the supercritical, that area of pressures above 3,200 pounds per sq. inch where water and steam lose some of the behavior patterns we have known so well. Steam temperatures have increased, pressing the metallurgist to provide better materials to contain them. And all the while, boiler capacities have jumped by leaps and bounds. In short, the quest for greater efficiency has necessitated the development of boilers of Brobdingnagian proportions.

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There are many roads from Lilliput to Brobdingnag. The only sure one is the route of research. The ills that befell Gulliver are funny—only in a fable.



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TREND OF AFFAIRS

(Continued from page 536)

Administration were: Julius A. Stratton, '23, Chancellor; C. Richard Soderberg, '20, Dean of the School of Engineering; Robert M. Kimball, '33, Secretary of the Institute; Malcolm G. Kispert, 2-44, Executive Assistant to the President; John B. Wilbur, '26, Head of the Department. The heads of the various divisions within the Department were also present.

The Sunday meeting was held in the Faculty Club and convened at 2:00 P.M. At this meeting Dr. Wilbur reviewed the organization of his Department, the trends in enrollment, and the various research problems being carried on. In the death in 1955 of Donald W. Taylor, '34, Associate Professor of Soil Mechanics, the Department suffered a serious loss. Professor Taylor was outstanding in his field of soil engineering and considerable discussion developed as to his successor.

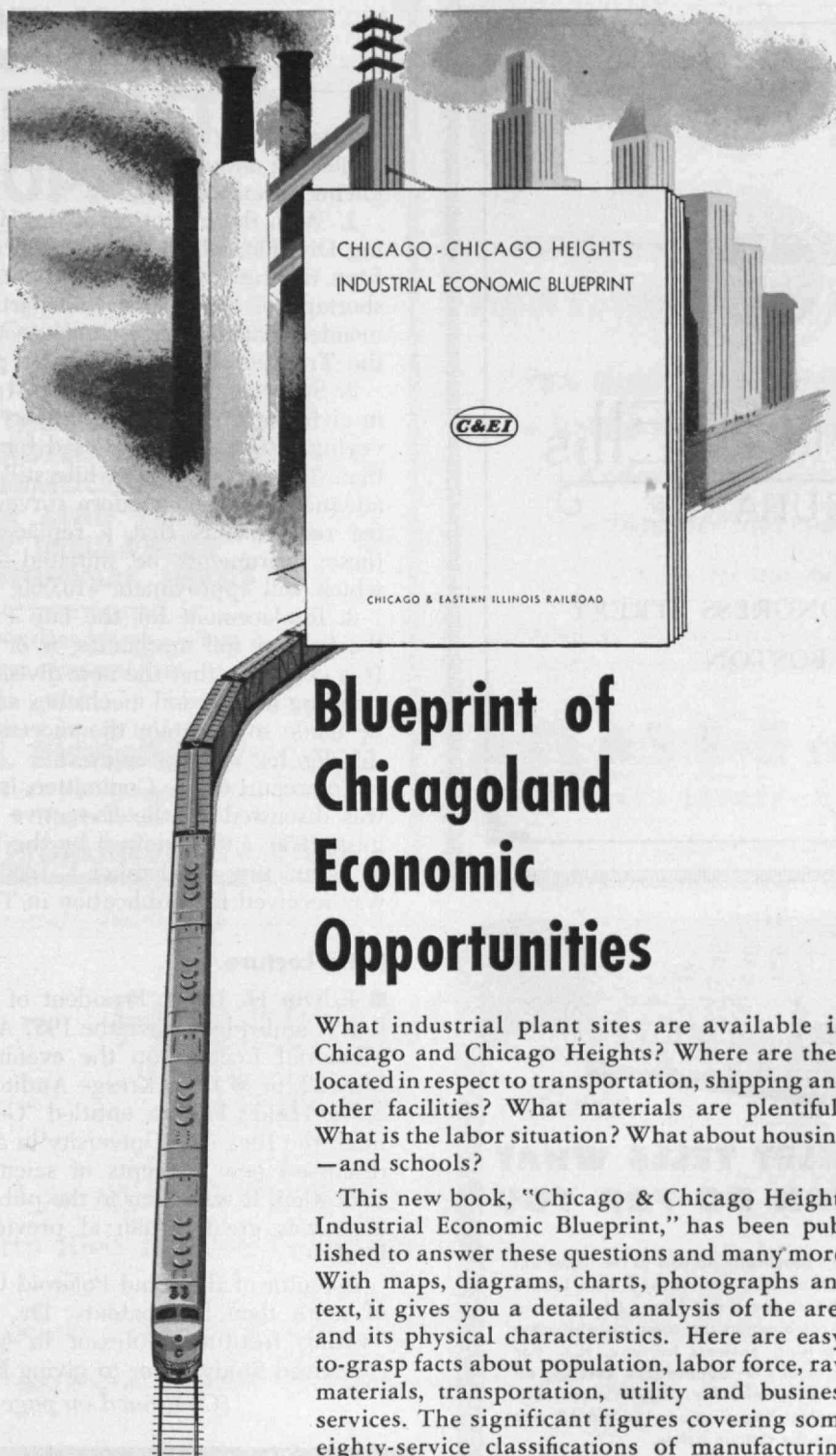
At the undergraduate level, student enrollment continues to be a matter of some concern. Dr. Wilbur explained to the Committee the various steps his Department has been taking to interest freshmen in this field. It was the opinion of the Committee that, in the field of civil engineering, there continues to be a substantial demand for students graduating in four years with a bachelor's degree and that the procurement and proper training of these students is a very important function of the Department of Civil Engineering.

Enrollment in the Graduate School continues to be satisfactory, with substantial numbers of applicants, and no problem is apparent at that level. Research in the many fields covered by the Department's activities continues to be satisfactory, both as to volume and scope, and the Committee was again happy to find that the research programs appear to be very effective as Graduate School instruction.

At the 1955 meeting of the Committee, Professor Wilbur outlined his ideas of a new approach to undergraduate teaching of civil engineering under which students start the professional subjects in their early years so that they may be encouraged to exercise judgment and imagination in their approach to engineering problems. At that time it was recommended that the proposed program of vertical education be tried on a partial scale, and this is currently being done in a sophomore course dealing with professional subjects. Experience to date has shown this new teaching concept to be educationally effective and popular with the students. It is hoped that, at a later date, this type of teaching can be further extended into the junior and senior years.

On Monday the Committee members met in the Department headquarters and were escorted to the various laboratories and divisions of the Department, following which discussions were held with all of the Faculty members. The Committee was greatly impressed with the various presentations made, and most particularly with the outside activities of many members of the Department.

(Continued on page 540)



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TREND OF AFFAIRS (Continued from page 538)

After the Monday discussions the Committee had a meeting and submitted to the Corporation the following recommendations:

1. With the exception of the Hydraulic Engineering Division, which is housed in a separate building from the rest of the Department, there is a critical shortage of space in the Department. It is recommended that the space vitally needed for research by the Transportation Division be provided promptly;

2. Surveying is an important part of any course in civil engineering. With minor exceptions the surveying instruments now used for teaching are more than 35 years old and while still functional are not adequate to teach modern surveying. The Committee recommends that a replacement program for these instruments be initiated—the total cost of which will approximate \$10,000;

3. Replacement for the late Professor Taylor, in the field of soil mechanics, is of prime importance. It is necessary that the new division head be an outstanding man in soil mechanics and that every effort be made to maintain the successful leadership this division has so long enjoyed.

The report of the Committee, issued May 10, 1956, was discussed by the Executive Committee in August, 1956, and reviewed by the M.I.T. Corporation at its meeting on October 1, 1956. On October 25 it was received for publication in *The Review*.

Little Lecture

■ Edwin H. Land, President of Polaroid Corporation (Cambridge), gave the 1957 Arthur Dehon Little Memorial Lecture on the evening of Wednesday, May 22, in M.I.T.'s Kresge Auditorium.

Dr. Land's lecture, entitled "Generation of Greatness: the Idea of a University in an Age of Science," discussed new concepts of scientific and technical education. It was open to the public and the attendance was greater than at previous lectures of its kind.

Inventor of the Land-Polaroid Camera and holder of more than 200 patents, Dr. Land is currently Visiting Institute Professor in M.I.T.'s School for Advanced Study. Prior to giving his lecture he spent

(Continued on page 542)



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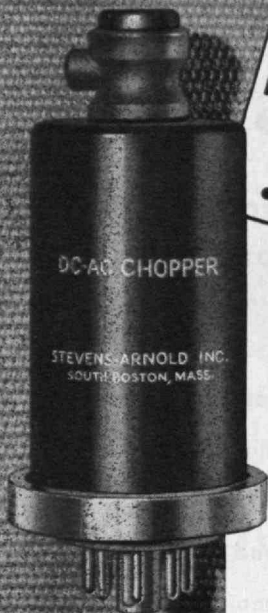
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TREND OF AFFAIRS

(Continued from page 540)

several weeks meeting with Faculty and administrative groups at M.I.T. to examine various aspects of teaching which are affected by rapidly changing scientific and technological concepts.

Established in 1944, the Arthur Dehon Little Memorial Lectures honor the memory of one of M.I.T.'s most distinguished Alumni. Dr. Little, a graduate of the Class of 1885, was known as an accomplished scientist who was also always greatly concerned with the social implications of scientific advance.

Previous lectures in the memorial series have been given by such outstanding men as Sir Edward V. Appleton, Dr. Detlev W. Bronk, Sir Henry Tizzard, and Dr. J. Robert Oppenheimer.

Blobs of Bronze

■ Twenty-one sculptures by Ibram Lassaw, who works with wire and a welding torch instead of with clay or stone, went on exhibit at the Institute in mid-May. The exhibition remained on display in the New Gallery of the Charles Hayden Memorial Library through June 16, and was available for Alumni Day visitors to see.

Non-objective constructions, consisting of intricate metal mazes coated with bright blobs of bronze, have attracted wide attention. Some stand as high as a man or higher and some are suspended from the ceiling.

One of the works, "Pillar of Cloud," was done on commission for Temple Beth-El in Providence. (The sculptor executed a 28-foot "Pillar of Fire" for Congregation Beth-El in Springfield, Mass.) Another, "Nebula in Orion," is from the collection of Mrs. John D. Rockefeller, III, and another, "Alcor," belongs to Mrs. Laurance Rockefeller.

Lassaw was born in Egypt but has been in this country since he was eight years old and is a citizen of the United States. He studied in Brooklyn and New York, where he now has a studio. He is currently working on commissions for a Roman Catholic Church in Centerville, Ohio, and a synagogue in Port Chester, N.Y.

(Concluded on page 544)



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TREND OF AFFAIRS

(Concluded from page 542)

Review of R.O.T.C.

■ Annual military day exercises were held at the Institute on May 7 with the main event of the day a parade and review on Briggs Field at 4:00 P.M. During this ceremony 41 cadets of the Departments of Military Science, Naval Science, and Air Science at M.I.T. were presented awards and medals for outstanding achievement.

Admiral Edward L. Cochrane, '20, U.S. Navy (Retired), Vice-president for Industrial and Government Relations at M.I.T., was reviewing officer.

Dignitaries in the reviewing stand included Major General William M. Morgan, U.S. Air Force, Commander of the Air Force Cambridge Research Center; Colonel James S. Morgan, U.S. Army, Representing Chief of the Massachusetts Military District; John E. Burchard, '23, Dean of the School of Humanities and Social Studies, M.I.T.; Colonel James R. Lyons, U.S. Air Force; Colonel Charles McAfee, Jr., U.S. Army, Head of the Department of Military Science and Tactics, M.I.T.; Colonel Harmon Lampley, U.S. Air Force, Head of the Department of Air Science and Tactics, M.I.T.; and Captain Joseph S. Lewis, Head of the Department of Naval Science, M.I.T.

The formation included about 1,600 cadets. Music was provided by the R.O.T.C. band under the direction of Major Frederick A. Harris.

THE STREAM OF LIFE

(Concluded from page 494)

In recent years, there has been much discussion of the importance of "peace of mind." Few creatures with minds have more peace than the koala bear or the opossum. What we need is not peace of mind but security of spirit, which is not at all the same as freedom from all anxiety.

We must grow with our universe. Its increasing complexity brings greater opportunity. The world is fuller of things that we consider good than philosophers of earlier days ever dared to expect. Man is being led into new fields of awareness, new challenges of attainment and new possibilities of destiny. As he awakens further and his competence and wisdom grow, he is able to control vaster reaches of his environment, and he is given the opportunity to make greater mistakes and learn to achieve ever greater victories. God's creatures are being pulled slowly in the direction of their needs in accordance with their ability to fit in with the whole of nature. This basic law is embodied in the maxim "Be of good courage, I have overcome the world." You have been given, to each in his own degree, the blessings of intelligence, imagination, and spiritual discernment. These three will carry you far.

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But a scaling down of our exaggerated emphasis on college education is only part of the answer. Another important part of the answer will surely be a greatly increased emphasis upon individual differences, upon the many kinds of human talent, and upon the immensely varied ways in which individual potentialities may be realized. If we are really serious about equality of opportunity, we should be infinitely serious about individual differences; because what constitutes opportunity for one man is a stone wall for the next man. Individuals differ vastly from one another, and they differ in innumerable ways. If we are to do justice to the individual, we must seek the kind of education which will open his eyes, stimulate his mind, and unlock his potentialities. There is no formula for this, and it may or may not involve what we now think of as a college education.

If we did develop such an indomitable concern for individual differences, then we would learn to laugh at the assumption that a college education is the only avenue to human dignity and social worth. We would educate some youngsters by sending them on to college. We would educate others in other ways. We would develop an enormous variety of patterns to fit the enormous variety of individuals. And no pattern would be regarded as socially superior or involving greater human dignity than any other pattern.

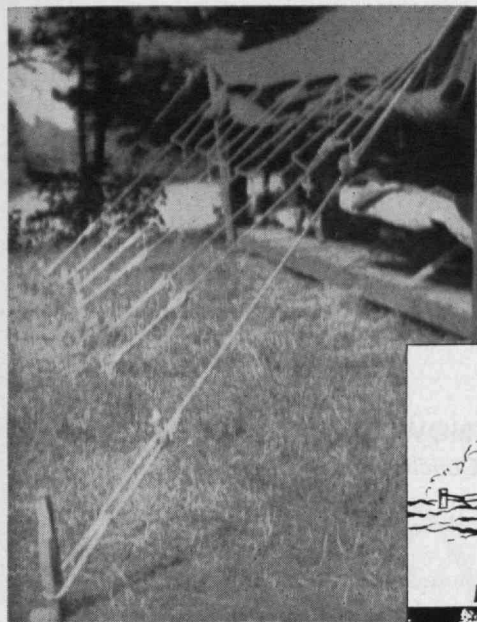
As long as the present heterogeneity of the college population exists—and it is most unlikely to diminish—then the only path open to us is to achieve even greater diversity in our higher educational system than now exists to correspond to the diversity of the clientele. There is no other way to handle within one system the enormously disparate human capacities, levels of preparedness, and motivations, which flow into our colleges and universities.

And such diversity has more than raw necessity to commend it. The diversity within and among institutions which will permit individuals of differing gifts, and differing bents to realize their varied potentialities can be a positively constructive attribute of our system. Specifically, it can aid us in the important business of stressing the many kinds of achievement of which the human is capable.

In seeking to promote such stress upon varied forms of achievement, we shall be abetted by a natural tendency in human beings to discriminate many kinds of abilities and to exploit many diverse sources of self-esteem. Given an opportunity, people will find self-esteem in the most astonishing variety of performances. This should be encouraged. The sort of capacity measured by the conventional college aptitude test is very important, but instead of putting a more and more monolithic emphasis upon this sort of talent, we should encourage all kinds of individuals to run on all kinds of tracks. In this way we can distribute very widely the rewards of self-esteem and self-respect which are the healthiest preventives of leveling reactions and can encourage on the broadest scale the release of energy and

(Concluded on page 548)

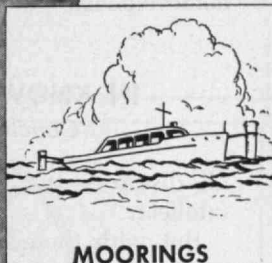
TAYLOR ELASTIC CORD



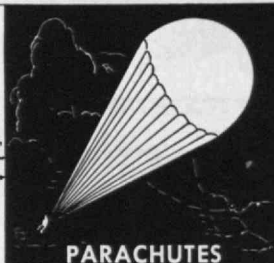
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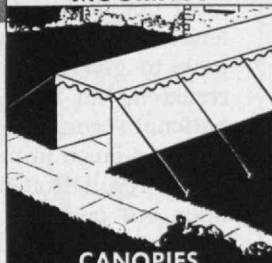
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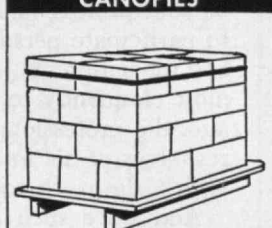
PARACHUTES



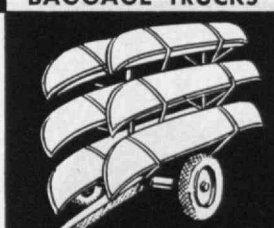
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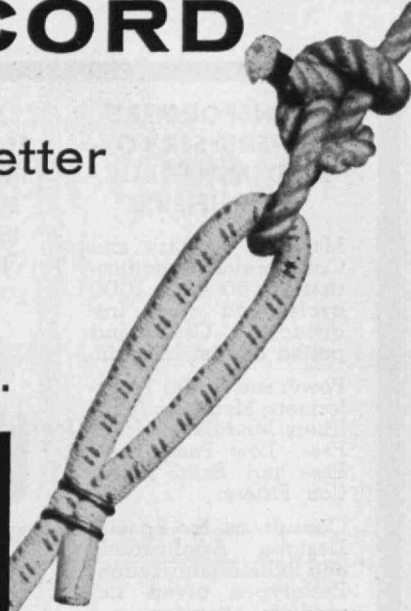
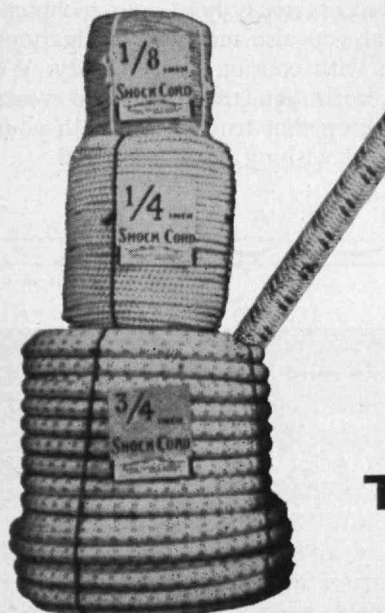
TRAILER TIEDOWNS



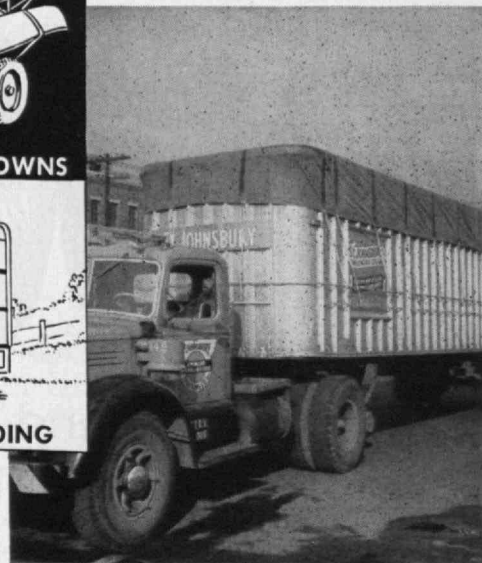
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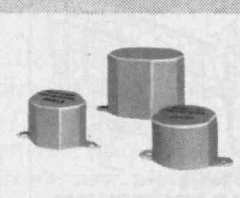
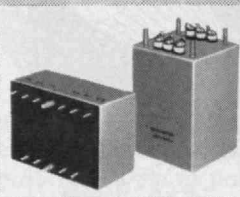
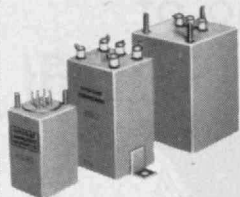
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EQUALITY AND EXCELLENCE

(Concluded from page 546)

positive motivation on the part of the individual which have been the great strength of our society.

Then, unhampered by popular attitudes disparaging excellence, we can dedicate ourselves to the cultivation of distinction and a sense of quality. We can demand the best of our most gifted, most talented, most spirited youngsters. And we can render appropriate honor to that striving for excellence which has produced so many of mankind's greatest achievements.

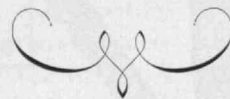
IN KNOWLEDGE LIES SECURITY

(Concluded from page 496)

all disaster — the wealth of the spirit and of the intellect.

But with these gifts go responsibilities that you must not ignore. Our society desperately needs the leadership, guidance, and statesmanship that you have to give. We need your leadership not only in research, but in the applications of research to our national security and to the public welfare. We need your guidance in resolving the tremendous problems which result from the impact of scientific discovery upon our civilization. You must be concerned with these matters which lie outside the narrow domain of your professional activity; you have an obligation to participate personally in affairs of the community and the nation. As Judge Charles Wyzanski expressed most eloquently to our graduating class a few years ago, the professional man must, over and above the resources of his intellect and experience, be imbued with a desire to contribute to the common account.

And since such a readiness to contribute to the common account is the hallmark of the professional man, let it be said of you at the end of your life that you achieved success not only in your technical competence, but that you also met your obligations to your fellow man with courage and honesty. We who have worked with you through these years know that you will keep that trust. I join with your families and friends in wishing you Godspeed.



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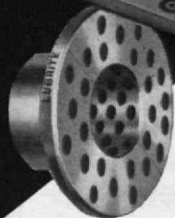
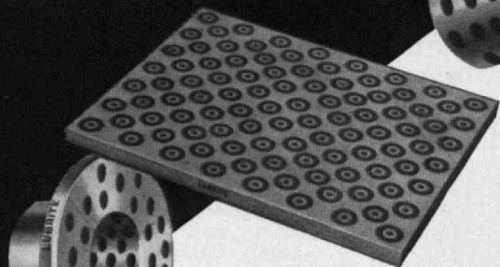
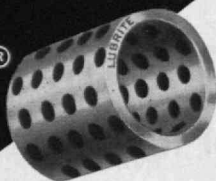
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(Concluded from page 503)

sell for \$250 and our (shown in Fig. 3)* costs \$7.00, and works.

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Fig. 4† shows that there are the circular waves from one source.

Fig. 5† illustrates what happens when there are two sources going together, and in phase. If there are any engineers in the house they will see the interference pattern of two antennas, and some of them will see how the phase changes at the nulls in Fig 6.†

We have also made a slide which shows diffraction by a slit or, if there is an engineer in the house, it shows why you can hear sound behind the door.

Now to end.

Some kits are prosaic, but many experiments, like one you saw, require a superb vacuum. To ensure that the students can make experiments like the Nobel Prize winning experiments of our century, we have made a model of a vacuum tube enclosed in an evaporated milk can, and the cost of the parts is about \$0.75. Some very new vacuum techniques make this possible today, whereas a year ago no one would have believed it.

Now you can see that we are going to try to enable the general public to participate in the greatest intellectual achievements of modern man while they go on. And for those students who are attracted into science, we hope that in this direct participation they learn the essential humility of the scientist. In summary, that humility is, "It's better to light one candle than to complain of the darkness."

*Illustration on page 502.

†Illustration on page 503.

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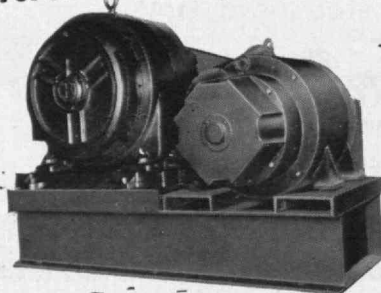
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SINCE 1904



PRESIDENT'S REPORT

(Continued from page 506)

in October, for a new \$800,000 building adjoining the Armory as part of the Du Pont Memorial Sports Center. The Du Pont Memorial Center will have facilities for six of the eighteen sports at M.I.T. including six squash courts and space for wrestling and fencing. It will also contain facilities for women and a locker room for faculty members. These new facilities have been made possible by the very generous bequest of young David F. duPont, '56, who met tragedy in an automobile accident in 1955, only a few days after reaching his twenty-first birthday.

Faculty Salary Adjustment

Finally, and tenth, I come to our continuing obligation to maintain those conditions of compensation, recognition, and reward which are essential if we are to maintain here an environment which will attract and hold first-rate teachers. Such an environment is characterized by many subtle qualities: the standards of excellence which prevail, the interaction and interstimulus of first-rate minds, an atmosphere of creativity and professional advance, the status of dignity and freedom the members of our Faculty have and feel they have. It involves all the subtle and imponderable factors which enable a group of scholars to make a great university, when otherwise the same group might constitute a mediocre one.

We seek to maintain and enrich all of these environmental conditions, but just now the overriding need is to achieve an adequate level of faculty compensation. Under conditions of present shortages of manpower in the fields represented at the Institute and in the face of the growth that must come in the American system of higher education, it is becoming steadily more apparent that first-rate scholars and teachers are becoming one of the scarcest talents in the United States.

Many young men graduating with advanced degrees may now obtain positions at the start of their careers paying higher salaries than their experienced teachers receive. The discrepancy between industrial and academic salaries is greater in the fields of engineering and science than any others, and this gap threatens to divert too many able, young engineers and scientists from electing academic careers when they might otherwise wish to. If talented young people are to be attracted into academic careers, such conditions must be remedied.

In the face of M.I.T.'s need to meet this problem squarely and as evidence that we can do something about it, I have an important announcement to make. Alfred P. Sloan, Jr., '95, through the Alfred P. Sloan Foundation, Inc., has offered to make a grant to M.I.T. of up to a million and a quarter dollars towards a five-million-dollar fund for Faculty salaries provided the Institute obtain three and three-quarter million dollars from other sources. Mr. Sloan has long been an advocate of adequate compensation

(Concluded on page 554)

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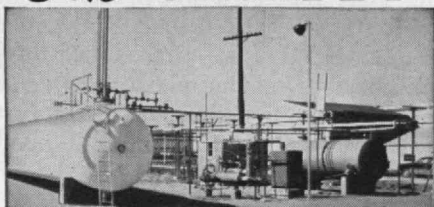
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PRESIDENT'S REPORT

(Concluded from page 552)

for creative talent in both industry and education, and as a member of the M.I.T. Corporation he has taken the lead in finding ways to increase Faculty compensation.

The Corporation has accepted the challenge of this generous and timely offer of Mr. Sloan's, and in the past few months we have quietly secured in gifts and pledges more than a million dollars toward the three and three-quarter million dollars we must raise. With this encouraging start, we now undertake a special and concentrated drive to secure the remaining two and three-quarter million dollars which will insure the full amount from the Sloan Foundation and thus will enable the Institute to meet the total goal of a five-million-dollar Faculty Salary Adjustment Fund. I make this announcement in full confidence that we can achieve this objective and that therefore we can take a decisive step to enable M.I.T. for the first time in its history to have a Faculty salary scale for which we need not be apologetic. Thus we take the first major step in preparation for our 100th birthday.

In these ten areas I have touched upon are a few examples of the new requirements and the unfolding opportunities which lie before us. They illustrate Rogers' vision of education constantly anticipating and adjusting to the needs of the future.

M.I.T. stands today at the very height of her powers, bidding fair, if she exerts herself vigorously and wisely further to augment her excellence, her creativity, and her leadership. She could slip from this eminence, too, if she — if we — fail to meet the increasing requirements our society exacts of its leaders, both institutions and men, or if she sets her sights too low and becomes content with little plans, limited aims, and paltry means. If our past really proclaims our future, we will not fail to achieve these new goals and meet the new requirements which rest upon us.

In Virginia there is a mountain, the highest in the state, which bears the name of William Barton Rogers. In education and in the concept of this institution he framed, we have another towering mountain; and as we push up its slopes, we realize how great and exhilarating has been the climb so far and the challenging, unclimbed heights which lie ahead.

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and the prophet replied:

*"It is well to give when asked, but it is
better to give unasked, through understanding."**



Gifts by Will

TO THE Massachusetts Institute of Technology

The tale is told of Almustafa, the prophet, who, having awaited for many years the ship that would return him to the place from whence he came, was making the final descent to the shore when the folk of Orphalese crowded about him. They besought him before departing to "disclose us to ourselves, and tell us all that has been shown you of that which is between birth and death."

With words of wisdom, an answer appropriate was given to the woman holding a baby, to the ploughman, to the merchant. Begged one, "Speak to us of GIVING," and the prophet replied:

"It is well to give when asked, but it is better to give unasked, through understanding;

And to the open-handed the search for one who shall receive is joy greater than giving. All you have shall some day be given;

Therefore give now, that the season of giving may be yours and not your inheritors'."

Through the years the prophet's words have held true, for even today he who "through understanding" includes the MASSACHUSETTS INSTITUTE OF TECHNOLOGY as a beneficiary in his will can experience thereby a two-fold satisfaction. The successful culmination of his search for a worthy recipient and the anticipated results his generosity will assist in accomplishing. These satisfactions give an added value to the span of man's days and project his usefulness to his fellowmen far into the future.

The Massachusetts Institute of Technology because of the high quality of the education given its students, its effective research work for aiding America in peace as well as in war, and the high character of its governing body and academic staff qualifies as an institution for serving our American ideals for the present and in the years to come.

But the search, the finding; and the anticipated accomplishments are not enough; for without the properly-worded record, man's plan for the future may go awry. Hence the prophet's importuning, "—give now," should be heeded. The giving need not be an immediate physical transaction, for written directions replace the spoken word when the speaker is no longer present, and a donor can frequently make by will a gift which is larger than he can make while living. Truly, *"it is well to give when asked, but it is better to give unasked, through understanding."*

A booklet "Gifts by Will," outlining different forms of bequests to M.I.T., is available to you or to your attorney by writing to:

Director of Development
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

* "The Prophet" by Kahlil Gibran

ALUMNI AND OFFICERS IN THE NEWS

New Posts . . .

In addition to the 30 Alumni recorded on pages 484 and 485, other Alumni recently advanced to new posts include:

GEORGE A. WEST'26, as controller and manager of finances, Taco Heaters, Inc., Cranston, R.I. . . . GEORGE D. HUFF'33, as director of plant engineering, Perkin-Elmer Corporation, Norwalk, Conn. . . . JOHN E. LOGAN'33, as assistant vice-president, New Jersey Power and Light Company.

ARNOLD F. KAULAKIS'38, as director, Process Research Division, Esso Research and Engineering Company . . . PAUL V. KELLMAN'39, as assistant manager, Ground Equipment Sales, Surface Armament Division, Sperry Gyroscope Company . . . WILLIAM H. WOOD'39, as assistant manager, Sales Development and Technical Service, Film Department, E. I. du Pont de Nemours and Company.

JOSEPH S. QUILL'41, as manager of marketing research and product planning, Industrial Control Department, General Electric Company . . . DONALD D. SCARFF'41, as Western Division sales manager, Lamp Department, General Electric Company . . . RANDALL S. CASWELL'44, as head of the Neutron Physics Section, Atomic and Radiation Physics Division, National Bureau of Standards.

JACQUES E. DUBOIS'44, as chairman of the Woonsocket Planning Board, Woonsocket, R.I. . . . GEORGE H. POWERS'44, as assistant manager, Sales Engineering Department, Norton Company . . . RICHARD E. WHIFFEN'44, as plant manager, Missiles Section of the Products Division, Bendix Aviation Corporation.

FRANK J. GRAZIANO'45, as secretary, Monarch Machine Tool Company, Sidney, Ohio . . . BARRETT B. BROWN'47, as assistant production superintendent, Hooker Electrochemical Company, Niagara Falls, N.Y. . . . BENJAMIN Z. RANAN'47, as vice-president, Artistic Manufacturing Company, Stamford, Conn.

MARVIN BECKER'49, as operating superintendent in lustrex extrusion, Plastics Division, Monsanto Chemical Company . . . CHARLES W. PIKE'49, as manager of the Cincinnati Plant, Kroger Company . . . KENNETH A. YOUNG'49, as president of the Boston Chapter, Society of Technical Writers . . . R. DEWEY RINEHART'56, as director of engineering, Rockets Division, Bell Aircraft Corporation.

Books and Articles . . .

Fundamentals of Sonar by J. WARREN HORTON'14 of the Navy's Underwater Sound Laboratory. The first book in its field, it is a treatise on the theory of underwater acoustics, written expressly for the sonar engineer and for naval officers concerned with submarine and antisubmarine work. (Annapolis, Md.: U. S. Naval Institute, 1957, 387 pages, \$10.)

Engineering Analysis by STEPHEN H.

CRANDALL'46, Associate Professor of Mechanical Engineering. Concerned with the analysis of engineering problems of great complexity and the methods for organizing practical programs for their numerical solution, this book is of interest to engineers and engineering mathematicians of the graduate student level. (New York: McGraw-Hill Book Company, Inc., 1956, 417 pages, \$9.50.)

Optics by BRUNO B. ROSSI, Professor of Physics. Geometrical optics is approached from an extended treatment of Huygen's principle. Most of the book is concerned with physical optics. Intended for upper class university courses. (Reading, Mass.: Addison-Wesley Press, 1957, 510 pages, \$8.50.)

"Television Terminals for the L3 System" by J. JAN JANSEN'38. Special television terminals for use with the L3 coaxial cable system have been developed. These terminals are designed to accommodate the full bandwidth needed for both color and black-and-white television signals. (*Bell Laboratories Record*, May 1957, p. 179.)

"Microwave Gas Discharge Breakdown in Air, Nitrogen, and Oxygen" by SANBORN C. BROWN'44, Associate Professor of Physics, and DAVID J. ROSE'50. The microwave breakdown electric field has been measured for pure air uncontaminated by discharge products, and for nitrogen and oxygen separately. The breakdown field for pure air is significantly higher than that previously observed, in which cases such contamination could be suspected. (*Journal of Applied Physics*, May, 1957, p. 561.)

"Common or Uncommon Systems: Air Traffic Control and Air Defense" by DAVID R. ISRAEL'49 and HERBERT SHERMAN, both of the Lincoln Laboratory staff. Describes the essential similarities and differences between our Nation's air traffic control and air defense and points out those directions in which efforts toward a future common system might best be made. (*Aeronautical Engineering Review*, May 1957, p. 85.)

Obituary

HENRY P. BENSON'86, May 9
WALTER H. TENNEY, JR.'89, November 9, 1956

STERLING T. DOW'91, November 23, 1956
GEORGE F. ROWELL'92, January 30
HERBERT E. WALKER'96, July 12, 1952
JESSE W. SHUMAN'97, March 9*
ARTHUR A. BLANCHARD'98, March 25, 1956*

PERCY A. CAMPBELL'98, April, 1954
ALBERT S. PERKINS'99, March 5, 1954
FRED WIGHTMAN'99, March 29, 1955
ROBERT H. BROWN'01, April 6*
ALFRED W. ALLYN'02, May 8
HARRY B. CANBY'02, April 6*
WALDO H. COMINS'02, July 26, 1956*
JOSEPH S. STETSON'02, July 26, 1954

WILBUR L. VATTER'02, April 24*
DAVID S. REYNOLDS'03, March 31*
ALONZO R. BAYNE'05, assumed deceased*
HARRY J. GUERIN'05, December 18, 1956
MRS. ARTHUR P. POWERS (HELEN F. BOYD)'05, assumed deceased*

THORNTON M. GILMER'06, assumed deceased*

WILLIAM I. LOURIE'06, December 11, 1956*

GEORGE C. WESTERVELT'06, March 15, 1956

HENRY D. LORING'07, March 20*

JAMES H. MULCARE'07, January 30, 1955

JONATHAN G. SHERLOCK'07, March 3

OSCAR H. STARKWEATHER'07, April 20*

ROBERT B. ARNOLD'08, March 19*

GEORGE R. COOKE'08, December 27, 1956*

ROBERT F. HASKELL'08, February 4, 1956

FRANK E. LUDINGTON'08, December 7, 1956*

LYMAN F. WHITNEY'09, May 4*

CHARLES C. CLARK'10, March 23*

BRADLEY JONES'10, March 8*

JAMES H. O'BRIEN'10, February 2

H. ROSSITER SNYDER'11, April 27*

JOHN BECKER, JR.'12, May 2

JAMES A. TILLINGHAST'12, April 13*

JOHN T. WALSH'15, April 28

G. MALPASS GRUBNAU'16, November 25, 1956

KENNETH L. HARPER'17, May 9

FREDERICK OHRT'17, March 5

SEGUNDO H. AYALA'20, 1953

GEORGE T. CORR'20, April 17*

HAROLD L. STARK'20, January*

ROBERT J. HOLE'21, April 13*

CHARLES MACKINNON'21, May 7*

LAWRENCE W. CODDING'22, April 30*

RAYMOND C. RUNDLETT'22, May 4*†

FREDERICK T. ENTWHISTLE'23, April 27*

FRANKLIN M. GENTRY, 2d'23, April 17*

CLINTON H. HAVILL'23, 1953*

LLOYD M. LONG'23, April 5, 1956*

WILLIAM F. DONOVAN, JR.'24, March 11*

CHARLES F. RAMSEYER'24, December, 1956*

ROBERT S. WERTHEIMER'24, May 19

CHOLE M. JACKSON'25, April 21

HERBERT A. LAFLER'25, March 17*

ALBERT G. MALAGODI'25, April 19*

CHARLES H. DAISY'27, May 17

KENNETH H. HEMENWAY'27, April 15*

RUSSELL R. JAMES'27, March 23*

SAMUEL J. WIXON'29, May 25

LESTER E. KEENE'30, October 19, 1956*

CHARLES B. CONWELL'31, April 1*

ROBERT H. CLARY'32, January 1

WALTER N. BROWN, JR.'39, September 13, 1955

ANDREW I. MCKEE, JR.'42, June 1956*

FAIRFIELD N. STONE'42, November 25, 1956*

VICTOR J. STUMPP'44, 1952

VICTOR RAGNI'47, April 13

DAVID A. FORREST'50, assumed deceased

* Further information in Class Notes
† In New York Notes

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Boston Luncheon

The M.I.T. Luncheon Club met at the Union Oyster House at 12:15, April 18, 1957, with a good turnout of over 70. Chairman Fred Dillon suggested that for the final meeting of the season in May each member try to bring an M.I.T. Alumnus as a guest to stimulate the growth of the Club. He then called upon Dyke Arnold, Chairman of the Nominating Committee, to present the slate of officers for the 1957-1958 season. They were: Chairman, C. Vincent Vappi'48; Secretary-Treasurer, Parke D. Appel'22; and Executive Committee, Frederick N. Dillon'22, John W. Kilduff'18, and George A. Parkhurst'36. The slate was then elected.

Chairman Dillon then introduced the speaker of the day, Jay W. Forrester'45, Professor of Industrial Management. Professor Forrester's talk concerned application of science and engineering to the field of industrial management, with particular reference to the use of digital computers.

The M.I.T. Luncheon Club met Thursday, May 16, 1957, at the Union Oyster House. Dr. Lucian Pye, Assistant Professor of Political Science at the Institute, was the speaker. Much of his work at the Institute has been in international studies—economic development, communications, and political behavior in the non-Communist world. It is reasonably easy to define the economic and social structure of foreign countries, but more difficult to explain why they act as they do because of the different frames of reference from which the people view the world.

Why are Asians turning to Communism? Mr. Pye studied this question on an empirical basis in Malaya interviewing captured or defected Communists. The objective was to study these people in the Communist movement and the background of why they joined the Communist party. The family background was, in general, "middle class" as viewed in their own minds. They felt, also, that they could easily improve themselves. They had a feeling of wanting to achieve a higher level than their parents, but were insecure in relation to their contemporaries. Old ideals such as integrity, filial respect, diligence, etc., were rejected. New ideals of cleverness, shrewdness, opportunism, were followed. There was a deep sense of frustration, when educated, to not be able to use their education to further themselves in their traditional society. They were oriented toward city life, rejecting traditional agricultural life. Their concept of politics was that it was the concern of the elite. Achievement was equated with being in politics. Politics was a web of personal relationships, contacts, and politi-

cal influence. Politics was a youthful activity.

Therefore, through politics, one may make something of oneself and gain achievement. In the Malayan political scene, the Communist party was an active, powerful group at a personal level, easy to contact. Also, the Communists recruited members whereas other parties did not. However, after joining, many found that they did not actually find the personal expression and security they anticipated. — C. VINCENT VAPPI'48, *Secretary*, 240 Sydney Street, Cambridge, Mass.

Buenos Aires

The last meeting of the M.I.T. Club of Buenos Aires consisted of a visit to Grafa, one of the largest textile industries in Argentina, and took place on the 27th of April. The visit was arranged by our member, Gerardo Cahn, who is working as an engineer in the Grafa plant. Grafa produces 13 percent of all the cotton fabric in this country, and manufactures sheets, shirts, working clothes, etc. It employs 4,600 workers, and the plant extends over 125,000 square meters. The authorities of the plant gave us a very kind reception, and during the visit every interesting detail of manufacturing was explained to us. After visiting the plant a luncheon was served.

The following members attended this visit: Oscar L. Briozzo, Anibal F. Collazo, Antonio Marin, Roberto J. Ottonello, Eduardo V. Oxenford, Luciano Preloran, Segundo Vallejo, Bernardo Kupferschmid, and Gerardo Cahn. — GERMAN A. FRIAS'40, *Secretary-Treasurer*, Rodriguez Pena 1934 - 2° P. Cap., Buenos Aires, Argentina, South America.

Buffalo and Niagara Falls

Our spring meeting was held on April 29, 1957, at the Saturn Club in Buffalo. A spirited group of 31 attended to hear talks by Dr. Rolland J. Gladieux, former science teacher and educator, and Dr. Rudolph J. Cherkauer, associate professor of mathematics at State University of New York College for Teachers at Buffalo. The theme of the meeting was: "Are our high schools preparing youth for the coming world of technology?" Considerable discussion attended the remarks of the two speakers. The group divided into three smaller groups for "brainstorm" sessions on the following subjects: (1) What can we as engineers and scientists do to help high schools in their mathematic and science programs? (2) What can we as M.I.T. Club do? (3) What techniques can schools use to make mathematics and science teaching more effective? A large number of ideas were received, which will be screened and submitted to the Institute.

Following the regular meeting, elections were held for officers and directors. The following were elected: Thonet C. Dau-

phiné'35, President; Whitworth Ferguson'22, Vice-president; Ray S. Hamilton'24, Secretary-Treasurer; Joseph A. Bergantz'41, Publicity Chairman. New directors are: Donato A. Grieco'31, Ray S. Hamilton'24, Fred J. Johnson, Jr.'40, Watt W. Webb'47. Directors remaining on the Board are: Thonet C. Dauphiné'35, Robert V. Horrigan'44, Richard K. Koegler'36, Warren H. Miller'45, James B. Neal'15, Richard S. Paul'52, Thomas H. Speller'39. Richard Koegler was chairman and did an excellent job with arrangements. — THONET C. DAUPHINÉ'35, *President*, Calkins Road, Youngstown, N.Y.

Cleveland

The final meeting of the 1956-1957 season was held Tuesday, April 23, at the University Club, with approximately 35 members attending. The evening was a conventional cocktail hour with dinner and entertainment following. This was the annual meeting, and a slight discussion was held concerning the possible changes to the Club's Constitution, which changes are going to be presented for vote during this next season's meetings. This final meeting completed one of the most successful years of the Club's growth. The number of members in attendance this past year was greater than in any previous season, and the excellence of the meeting schedule has created a much greater interest in M.I.T. in this local area.

Following the short business session after dinner, the M.I.T. movie "SAGE" was shown, and then the meeting was adjourned. We would like to call attention once more to the fact that the local Alumni Directory of the M.I.T. Club of Cleveland is still available at \$1.50 per copy, and any Alumnus who may wish to obtain a copy may do so by writing the Secretary at the address shown below. — JAY P. AUWERTER'38, *Secretary*, Atlantic Automatic Company, 18502 Syracuse Avenue, Cleveland 10, Ohio.

Indiana

The Indiana Association of M.I.T. in Indianapolis held its first meeting of the 1956-1957 season on October 18 in the Indiana University Medical Center. The primary purpose of this special meeting, besides formulation of plans for the season, was to hear Joe Conrad from the Institute cover the coming personal solicitation campaign for the Alumni Fund. Those who heard Mr. Conrad's talk were John H. Babbitt'17, President of the Association, Spiros G. Pantazi'47, Vice-president, Marshall D. McCuen'40, Secretary-Treasurer, Howard S. Morse'03, Lowell L. Holmes'23, Frank J. Travers'23, Harry Karcher'25, Thomas G. Harvey'28, and Samuel H. Hopper'33. Following the talk the group saw a very fine film on nickel mining in Canada loaned by the International Nickel Company.

On November 29 the Association held its second meeting, again at the Indiana University Medical Center. This was labelled "Amateur Radio Night" and included the ladies. Besides Babbitt, Pantazi, McCuen, Travers, and Harvey, there were Edgar B. Godley'26, W. Stewart Roberts'32, and two out-of-town guests, John H. Holton'17 and F. Sidney Badger'27. Following the dinner, Spiros Pantazi gave a talk on his adventures in the world of short-wave "ham" radio as a hobby. He had invited two of his "ham" friends to the dinner (not M.I.T. Alumni, unfortunately), and, after his talk, the group divided into three parts and drove out to the homes to see the installations in operation. All had a very interesting and enjoyable evening contacting various parts of the world.

The third meeting of the season found the group at a new meeting place. It was held January 31 in the Continental Hotel with the ladies again invited for cocktails and dinner. The turnout was a banner one. Of the 37 present, 21 were Alumni: Babbitt, Pantazi, McCuen, Harvey, Godley, Karcher, Morse, Roberts, Travers, Douglas C. Jillson'01, John B. Welch'13, J. Raymond Ramsey'17, Simon J. Martenet'04, John T. Fisher'34, Donald W. Fork'42, Archie Tower'44, Thomas C. Dorsti'47, Mrs. Thomas C. Dorsti'47, S. J. Garvin'50, William E. Rogers, Jr.'50, and Gilbert B. N. Mar'52. After a very delectable dinner, the group was held spell-bound for about an hour and a half with a talk titled "Atoms Up To Date" given by Mr. Robert Kryter, a consulting engineer who happens to be an alumnus of Purdue University. He gave us a very complete and interesting picture of the progress in the field of atomic energy.

On March 28, the fourth meeting was held, again at the Continental Hotel. This one was for Alumni only, and Ralph H. Pinkham'99 joined Babbitt, Pantazi, McCuen, Morse, Holmes, Welch, Garvin, Fisher, Tower, and Harvey for cocktails and dinner. Following the dinner, Thomas Harvey, Past President of the Association and perennial spark plug of the group, gave a talk on "The Metal Mercury." He covered many of its unique properties and uses and stressed the problems connected with making it pure enough to perform satisfactorily in its many applications. The talk was very well done and resulted in a lively question period at the end.

The final meeting of the season is scheduled for May 23. It will be a pitch-in dinner ladies' night (of course!), and will be held in the social room of a new local bank building. It should bring to a close a very successful season under President John Babbitt. — MARSHALL D. MCCUEN'40, *Secretary*, 4414 Broadway, Indianapolis 5, Ind.

Kentucky

The M.I.T. Club of Kentucky held its March meeting at the Louisville General Electric Appliance Park. Twenty-six members and Joe Conrad of the Alumni Association were present. An enjoyable program was arranged by Walter R. Weeks'24 and Howard D. Edwards'45 of Appliance Park. The program included a luncheon and a guided tour of the con-

temporary kitchen exhibits and of the dishwasher and disposall manufacturing facilities.

At the April luncheon meeting plans were formulated for a stag party in June at the home of Craig P. Hazelet'18, Past President of the Club. Our President, James R. Kane, Jr.'44, states that this outing will be the final meeting until fall. The Club wishes to thank George Morrisette'35 for his fine job as the 1957 Alumni Fund Chairman. — JOHN D. HARMS'48, *Secretary*, 10002 Old Third Street Road, Valley Station, Ky.

Milwaukee

The scientists and engineers of the M.I.T. Club of Milwaukee switched to the gambler's adage, "When you've got a winning combination, keep up whatever you're doing." Since our last dinner meeting which included wives and dates was so successful, we decided to include the fairer sex when Professor A. M. Gaudin of the Department of Metallurgy spoke to us on Wednesday, April 24. Professor Gaudin spoke briefly on several subjects, principally on the shortage of engineers. However, the group entered into a question period, and Professor Gaudin, one of the best-informed men on the Institute's staff, answered all queries with much understanding of current conditions. We were particularly favored when Raquel Montalvo — Mrs. John Koch — sang for us. Her talent was equalled by her gracious charm.

Election of officers for the coming year was held. Unanimously elected to serve were the following: President, Charlie Sollenberger; Vice-President, Bill Bohlman; Treasurer, Bill Schield; Secretary, John Colby; Directors, George Pollock and Chuck Haeuser. — WILLIAM H. SCHIELD, JR.'46, *Secretary*, 2723 E. Newton Avenue, Milwaukee 11, Wis.

New York

The annual meeting of the M.I.T. Club was held May 9, 1957, at the Club in the Hotel Chatham, East 48th Street, New York. Following a short meeting, cocktails and a buffet dinner were served affording an opportunity for many old friends to get together. The following were elected officers of the Club for the ensuing year: Eugene R. Smoley'19, President; Winfield I. McNeill'17, Vice-president; D. Kenneth Finlayson'35, Vice-president; Anton E. Hittl'36, Vice-president; Roger G. Blum'41, Secretary; Thornton E. Smith'45, Treasurer.

The membership has passed the 1,750 mark, and by all indications will exceed 2,000 this year. Many members are out-of-towners who use the Club as headquarters when in New York. The dues schedule is such that those who visit in New York only occasionally can afford to join. Why not drop in next time you are in New York and avail yourself of Club facilities including bar, dining facilities, and luncheon rooms? Should you desire reservations, the Club is well set up to handle this and many other services. The M.I.T. Club of New York is fortunate in having obtained the services of Mr. Soren Mathiasen, Executive Director, who has already instituted many innovations that have increased

the comfort and services the Club has to offer.

We regret to report the passing of former Club President Raymond C. Rundlett'22 whose death saddened all those who were privileged to know him. — ROGER G. BLUM'41, *Secretary*, 285 Old Colony Road, Hartsdale, N.Y.

Northern New Jersey

The M.I.T. Club of Northern New Jersey held its annual business meeting at the Hotel Suburban in East Orange, N.J., on Thursday, April 25, 1957. At this meeting the following slate of officers for the year 1957-1958 was elected: President, Stuart G. Stearns'39; Vice-president, Chester A. Williams, Jr.'39; Secretary, Warren J. King'48; Treasurer, Joseph Wenick'21. Elected for a three-year term on the Board of Governors, terminating in 1960, were: John F. Chesterman'34, Frank W. Conlin, Jr.'50, and Milton M. Manshel'22.

Following the election of officers a color film and talk was presented by Dr. Sherman of M.I.T. They were on the SAGE (Semi-Automatic Ground Environment) System for continental air defense developed for the Air Force by M.I.T.'s Lincoln Laboratory. — ROBERT M. GOULD'45, *Assistant Secretary*, 15 Wellington Road, Livingston, N.J.

Philadelphia

For our 60th Anniversary Meeting on April 27, we were again extended the unusual privilege of enjoying the magnificent facilities of Longwood Gardens on the estate of the late Pierre S. du Pont, Class of '90. Combined with a top-notch program, the affair set a fine standard of excellence. Your correspondent could draw up an impressive list of people to whom we are indebted, starting with the weatherman for the beautiful day, the working members of the Club for their efforts, the speakers for their worth-while messages, and the 350 Alumni who participated. When you get right down to fundamentals, however, I think it was readily apparent that our able president and master of ceremonies, Samuel McCauley'41, and particularly his wife, Nancy, deserved the bouquets for superb arranging and execution.

The gardens and conservatory were opened at about 6:30 P.M. Between then and 8:00 P.M., the guests had the opportunity to enjoy the floral displays, partake of a cocktail hour, and meet and socialize with our speakers and visiting dignitaries. Besides a number of famous local Alumni, we were honored by the presence of several guests from Cambridge. At about 9:00; we finished a roast beef repast and arrived at the essence of our meeting.

To start the program off, several of our special guests were introduced. They were C. George Dandrow'22, Past President; Harold E. Lobdell'17, Executive Vice-president; and Donald P. Severance'38, Secretary-Treasurer of the Alumni Association. After a greeting by Theodore T. Miller'22, President of the Alumni Association, we were addressed by Dr. Killian who talked on "Education for Tomorrow." Of the large number of problems in education today, the writer was impressed, first, by the serious lack of in-

terest in secondary school teaching primarily because of inadequate salaries and, secondly, by the loss to graduate study of talented bachelor's degree men who are being weaned away by current high starting salaries in industry.

Apropos of Dr. Killian's speech, the next event was a life-time Club membership presentation to Dr. Greville Haslam '15, who is retiring as headmaster of Episcopal Academy. Aside from his major contributions to secondary education, the Alumni of the area are indebted to him for his many contributions to local M.I.T. activities. Our final speaker was David A. Shepard '26, Director of the Standard Oil Company (New Jersey), who talked on "The Middle East: Problem and Opportunity." Because of his first-hand experience in foreign affairs, and particularly with the Middle East, he was able to give a fascinating talk.

As a finale, we were treated to a brilliant display of the illuminated fountains. — HERBERT R. MOODY '41, *Secretary*, 8609 Patton Road, Wyndmoor, Philadelphia 18, Pa.

Southern California

The officers and governors of the M.I.T. Club of Southern California for the year of 1957 are as follows: President, James S. Cullison '41; First Vice-president, Robert Welles '15; Second Vice-president, Jay Zeamer '40; Secretary, Joseph W. Marshall '53; Assistant Secretary, David E. Long '51; Treasurer, Homer S. Davis '24; Archivist, Hiram E. Beebe '10; Governors: Immediate Past-President, Anthony Thorman '27; Governors-at-Large—Raymond B. Stringfield '15, James T. Holmes '14, William H. MacCallum '24.

The classes will be represented by the following: 1922-1926, Phillip K. Bates '24; 1927-1931, George M. Cunningham '27; 1932-1936, Page E. Golsan, Jr. '34; 1937-1941, Andrew F. Kay '40; 1942-1946, Louis L. Balsam '44; 1947-1951, Howard A. Zwemer '47; 1952-1956, Leslie N. Reynolds '55.

Please note the addition of three new positions on the Board of Governors—the Governors-at-Large. This was done to give additional representation to the Classes 1914-1928, as these classes have more Club members than any other group. Correspondence should be directed to the Club Secretary, Joseph W. Marshall '53 at the address below. When necessary, President Cullison may be reached at 3909 Via Solano, Palos Verdes Estates, Calif. — JOSEPH W. MARSHALL '53, *Secretary*, 904 West Hyde Park Boulevard, Inglewood, Calif.

Toledo

Our May 6 luncheon meeting was attended by 12 of our 40 Alumni in the Toledo metropolitan area, and we are pleased to report much favorable comment on our "Round-table Discussion Program," which we undertook for the first time at this meeting and which we hope to continue for several months. Our guest at our May 6 round-table was Mr. E. O. Jewel, Manager of the Toledo Lucas County Port Authority, who led a lively and informative discussion of the port potential of the

City of Toledo. Our present plan for continuing our monthly after-luncheon round-tables includes inviting a prominent civic or industrial leader to be our guest and lead the discussion.

Our January luncheon featured the showing of the M.I.T. SAGE film, and in March we viewed the new M.I.T. film, "The Social Beaver." Our February annual M.I.T. night banquet at The Toledo Club was attended by 30 Alumni and their ladies who enjoyed hearing about recent happenings at M.I.T. from a beloved guest from Boston, Professor Erwin Schell.—E. ALFRED PICARDI '44, *President*, 3143 Goddard Road, Toledo 6, Ohio.

Washington

Over 50 members attended our last dinner meeting held at the Cosmos Club on March 28. Our guest speaker was Myrtle Cheney Murdock, mother of John Murdock '41, and wife of the former representative from Arizona. Mrs. Murdock is a noted author and lecturer on the Capitol, and is one of the 24 official guides of the Capitol. A copy of Mrs. Murdock's book, "Statuary Hall," was awarded as a door prize, and was won by none other than our president's wife, Mrs. Bob Blake.

Our next meeting will again be a dinner meeting held on Thursday, May 23, 6:30 P.M., at the Cosmos Club Auditorium (2121 Massachusetts Avenue, N.W., Washington, D.C.), after which we will adjourn to the Washington-Post and Times-Herald Building at 1515 L. Street, N.W., for a tour of the plant. J. R. Wiggins, Vice-President and Executive Editor, will be on hand to welcome us with a few words.

Looking ahead to next year, the Club is now formulating preliminary plans for an M.I.T. Alumni Regional Conference to be held in Washington, D. C. This will be the first such conference to be held in the Capitol area, and is tentatively planned for about February, 1958. — CHESTER N. HASERT '41, *Review Secretary*, 1300 N. Scott Street., Arlington 9, Va.

CLASS NOTES

1887

A listing of the 50 eldest Institute Alumni, published in the 1956-1957 Directory of the Alumni Association last fall, inspired a member of the Class of 1887 to suggest a 70th Reunion of the five remaining members, all nonagenarians. To carry out this suggestion, made by Oscar E. Nutter of Newton Upper Falls, it seems best to make our 70th a "Reunion of Biographies" in the Class News section of The Review.

But first, a brief summary of our Class history since the autumn of 1883 when the Institute steps of the dignified Rogers Building flowed generously toward Boylston Street. Here was the assembly for 250 freshmen gayly climbing. In four years they were reduced to a sedate procession of 52 caps and gowns. Class organization was prompt. Juvenile politics in the Boston Latin School were responsible for the first slate. A Class Fund was envisioned (it

worked!), thus providing help for perhaps a dozen, including \$5,970 for one wheel chair cripple.

Early Reunions were "early Reunions" — some even better. Our 40th at Chabecco Island provided baseball, deep-sea fishing, swimming, and eager chatting. Two nights produced turtles in some beds, live fish in others, with singing and howling — who wanted to sleep in that bracing sea breeze!

"I never saw a purple cow,
I never hope to see one;
But I can tell you anyhow,
I'd rather see than be one."

Yes, our Gelett Burgess was speaker at the 50th Reunion when 53, including wives, enjoyed Marblehead, giving one noon at Cambridge to eat and listen to our Orator. There were several quiet comments on "how old" the other fellow looked, but each was young for those three days.

Proudly claiming our 60th Reunion as a first 60th, 18 arrived at the Hotel Beaconsfield in Brookline in June of 1947. Eight only were fellow Alumni, the others, wives and relatives who felt that the octogenarians should not travel alone. Our physical Alma Mater on Boylston Street was gone, but we were proud of the big new baby in Cambridge, and, for a luncheon, accepted its warm hospitality. Perhaps the old Hotel Brunswick produced more nostalgia. The Class Trust Fund of undergraduate days was reported on by the two remaining trustees, Cameron and Carter. There remained \$3,912.86 which, according to the original provision, was turned over to D. L. Rhind, Bursar of M.I.T. A Class dinner with career reviews and congratulations on our grandchildren was a comfortable and comforting three-day climax of this 60th Reunion.

With the permission of the editors, we, the five remaining members of the Class of 1887, all nonagenarians, would now hold our 70th Reunion in The Review's inspiring columns. Here are our autobiographies.

From Richard E. Schmidt of Chicago, a loyal attendant at reunions, who was elected Class president at our 60th: He lost his wife, a son, and a daughter a number of years ago, but has two grandchildren and five great-grandchildren. His large architectural firm has specialized in the designing of hospitals. His avocations are music and astronomy. He set up a \$12,000 reflecting telescope in his own back yard, and his reports on new discoveries were accepted by astronomical societies with which he was connected. This telescope was eventually presented to the city.

From William L. Hillyer of Washington, D.C.: "My life has been uneventful. My wife and I wind up poor financially but rich otherwise, with two fine children, a son and a daughter, now in their forties; both have been all one could fervently hope for from their births. Our son served through World War II with the rank of captain without wound or mishap; now he is a lieutenant colonel in the Reserves and also holds a high position in the District of Columbia government. Our daughter is one of the leading magazine writers of the country. Their careers are largely due to the care and supervision of my

wife. This lady, herself, is near perfection, her life having been one of sacrifice and duty. We both enjoy exceptional health, have a small but fine apartment pleasantly located, cool in the hot, humid Washington summer.

"Seven years ago I resigned as a member of the Bar of the Supreme Court of the United States — the only member of its bar to take such action. I became convinced the court was not deciding many of its cases according to the principles of law but according to what it deemed should be the law, engaging in what is termed 'judicial legislation.' When the Court three years ago delivered its now famous decision on the racial issue prohibiting segregation in schools, I sent a statement to the Chief Justice of the United States. This will probably be my last effort. The clerk of the Court in transmitting the acceptance of my resignation stated that no one could have resigned with more propriety or dignity."

From Oscar E. Nutter of Newton Upper Falls: "When we entered, the Institute had only one building, the Rogers. The Walker Building was completed during our first year. The third president of the Institute, General Francis A. Walker, began his duties the same year that we did. We can remember standing on Rogers' steps and watching an odd conveyance go slowly by — it was the first experimental electric car in Boston being tested out. Very many of the most important things of today were unheard of then.

"My life since leaving the Institute has been rather uneventful, and I have lived in the same town, Newton Upper Falls, all of the time, but I never have been without a job. Before the end of our senior year I had a situation with the Pettee Machine Works, builders of cotton mill machinery, and I was with that company and its successor, the Saco Lowell Shops, for 45 years as mechanic, shipping clerk, assistant superintendent, superintendent, and general manager. At the age of 68 in 1932, I was retired. Seeing that event coming, I had started to help organize a corporation to manufacture surgical instruments, especially hypodermic needles. I became treasurer of the new company and have continued as such during the following 25 years. There is a son, a Tech man, and two grandsons in the business, and my present duties have been made quite light, but I go to the office for half of each day.

"In view of some of the shortcomings of age and the ever-increasing traffic jams, I gave up driving an automobile a year ago, although I still have a driving license. I was married to Clara E. Locke in 1892 and my wife is still with me. We have two sons and two daughters, all married long ago. We have also five grandchildren and four great-grandchildren.

"It is a long distance from 1887 to 1956, but I have lately read the '56 notes in The Review with interest. I notice that the genial secretary of '56 notes the marriage or engagement of many of his classmates. He also discusses diamonds, their production, supply and demand, etc. He reports nothing along these lines about himself. He must be a modest lad. However, he was seen in the vicinity of my son's home in Newton Centre various

times last spring, and if any of the '56 boys read these lines they should also read the following notice from the Boston Herald of a few months ago and mention it to Bruce. 'At a luncheon Dr. and Mrs. Denton Gove Nutter of Newton Centre and Pocasset announced the engagement of their daughter, Miss Marion, to Mr. Bruce Bredehoft.' — who is Secretary of the Class of 1956."

From Nathaniel A. Sparhawk of Shalimar, Fla.: Various notes reveal that he is now in Florida — that in undergraduate days he hailed from Melrose, Mass., which he speaks of as a delightful city — that in early manhood he joined the Wyoming Lodge of Free Masons being a member of the Grand Lodge for more than 50 years. Twice married, he has three lovely daughters, three granddaughters, and a grandson. Frail and often in fear of malaria, some years were spent in search of health which was found in Southern California while living in the family of an engineer and assigned only to out-of-door work. He states that while never amassing a fortune, he has always been able to provide for the needs of his family. California has now been exchanged for the Gulf Coast of Florida where he is living in a bungalow type of home in Shalimar.

Sparhawk, now in good health, as one of the five remaining members of the Class of 1887, suggests Mark Twain's famous dictum, to the effect — have a malady, care for it, and you'll live to a good age.

From N. P. Ames Carter, Chicopee Falls: A home here for 93 years in sight of my birthplace — a trip to London, England, to become engaged to "the girl across the street" — both a bit unusual! Ruby M. Blaisdell and I were married on April 25, 1894.

In my youth, photography and electricity were hobbies — making batteries, electric bells, spark coils, some of them used in the primitive medical batteries supposed to shock rheumatism away. The hired man suggested shocking the cow, he in the damp barnyard to hold a metal dishpan with salt and water to lure Bessie. He shouted, "All ready." I made contact. The cow's tail shot upward toward the North Star. Pat and Bessie doubled up trying to stand on each other's heads — simultaneously a MOO and a yell! What Bessie remarked you must imagine. Pat said, "You — rascal! You knew that would shock me too!" They both recovered. I have not yet ceased laughing and I am sure the amazed chickens have a pet story about the cow who really did jump backward over the moon.

In the 1890's, Springfield, Mass., had its first alternating current. My new shop was prepared to wire factories and homes with cotton-wound wire and wooden cleats. For 30 years I grew with the business and thoroughly enjoyed its rapid changes.

For Mrs. Carter and me, travel — particularly ocean cruises were a persistent goal. Greece and the Holy Land; Iceland and Spitzbergen with a day 250 hours long; Patagonia, the Straits of Magellan, and Robinson Crusoe's Island. There we hauled up two anchors — our own and the lost anchor of the German raider *Dresden*, known to have hidden there for repairs. A thousand-mile trip up the Nile where we were pleasantly shipwrecked on a mid-

stream reef and prepared to swim ashore. This proved to be unnecessary. Some of the usual sight-seeing of Europe followed. Our daughter thought surely we would be pushed into the sulphurous crater of Vesuvius on my refusing an extra tip to our three native guides.

A four-month cruise to India; my son-in-law requested that I bring home something different than the pool-reflecting picture of the Taj Mahal. Mine are not as beautiful but no pictures of that floating dome and those minarets can fail to inspire. Ceylon, Java, and China. We rode in creaking sedan chairs through narrow streets of Canton, the forerunner on one sidewalk, the rear-bearer on the opposite side, the chair over the open sewer that was the street. The fragrance of the East abounded — my chair poles broke — all Canton arrived; it was the cackling of hens in the barnyard. How the passport and wallet stayed in my buttoned inner pocket was a miracle. Beautiful Japan and Hawaii; little cruises to the Caribbean — all these gave glimpses of the "world away from home." They have inspired for both of us many a public recitation.

My native city of Chicopee has allowed me to serve for 24 years as chairman of its School Committee, 10 years as president of its Library Board. Governor McCall appointed me food administrator and co-chairman of the Public Safety Committee for the First World War.

Mrs. Carter passed away in December 1952. My daughter is living in Longmeadow and following in the footsteps of her charmingly social mother. I have also a granddaughter, a grandson, and three great-grandchildren, including 16-month old twins, endlessly energetic. Good health has been my fortune. — N. P. AMES CARTER, Secretary, 22 Grove Avenue, Chicopee Falls, Mass.

1891

Here follows two letters, entire, from our classmate, Louis A. Simon. His work was: Supervising architect of public buildings in Washington, now retired. You observe how emphatically this modest man admonishes me not to send these to The Review. Well! I am sure Louis will understand; we are not after polished articles to exhibit our learning, but just how we feel, what we love and admire, so we may help each other to live happily and well. We are all in the 80s, some on the verge of 90. At one point in our voyage we were together at Tech. Now, as the curtain will be drawn for the last time at no distant date, we put down the things precious to us. Perhaps we have not seen each other since 1891 — no matter! You may like me better that you have not seen me. I surely am not much to look upon.

"Dear Channing Brown: If ever a man had a consuming urge to ask forgiveness for a sin of omission, that man is myself. So will you please try to forgive me for not having responded to your friendly letter asking for an item for Class notes in The Review. On looking up that column in the May number, I read of the cruel accident you experienced. The determined courage and faith which brought such a remarkable comeback is a very wholesome example for us all.

"The primary cause of my inexcusable delay in answering your letter was that at the time of receiving it I did not know what to write for The Review. As a matter of fact, I don't know now. Though memories of early days may be precious to ourselves, it is quite something else to set that out in cold type after an interval of more than half a century. However, I will try to send you something later on aimed at answering the questions in your letter.

"Of the one about fellow students, those I know were in the course with me; i.e., architecture, and my particular friend was Lyman Ford. For the better part of a year we pedaled our bicycles some 3,200 miles in Europe, with a chance of finding something broader, deeper than is absorbed from textbooks. We found it!

"So to your reference to life in the 80s, I certainly have much to be thankful for, being still active in my personal pursuits, though retired from the actual practice of architecture. My wife never tires in her care for my general well-being, and, added to that, it is certainly helpful to look beyond the claims of the body to the larger realities of spirit, as you must have done during your recent convalescence.

"In the Class notes of the May number of The Review, it was suggested that we write to you, presumably for material to appear in that column. This letter has no such purpose and is merely a personal response to you, and not for publication. The three preceding words should be in capital letters, italics, and underlined! Some day I hope our paths may cross, as I should like to meet and talk with you. Until then, we in the 80s will keep our flags flying. Sincerely yours, Louis A. Simon."

"Dear Channing: I had hoped to answer your good letter by personally seeing you, as I expected to be passing through New York to Scarsdale yesterday. The occasion was my great-niece's wedding — Priscilla Mudge — today. But my wife was sick and we had to abandon the trip. I thought I might be able to get to Hastings yesterday P.M. or this morning. In May I always try to get to New York for the meeting of the Institute of Arts and Letters. If so, perhaps we can meet then, if you haven't gone back to Massachusetts by that time.

"I have not read the book you mentioned, 'The Measure of Man.' It must, from the title, be a far-reaching perspective of our present environment. My wife and I read aloud in the evening when we are at home, and are at present on the second volume of R. Bultmann's 'Theology of the New Testament.' His interpretation of the Gospel of John, and the Johannine Epistles, in distinction from the three synoptic gospels, is interesting, and to us, very informing.

"Your reference to your 'brusque' replies to my previous letters is a quite mistaken estimate of them, but they do strengthen my wish to have a long talk with you. Here's hoping! Mrs. Simon joins me in sending our kindest regards. Affectionately, Louis." — WILLIAM CHANNING BROWN, *Secretary*, 36 Foster Street, Littleton 2, Mass.

1896

Walter H. James writes, "Some eight years ago we sold our Waltham house and

moved to a smaller house here in Topsfield in order to be near our daughter and her family. I built a small workshop and equipped it with quite a complete outfit of woodworking machinery plus a good-sized engine lathe. Much of my time is spent there doing hobby jobs. Never having touched a lathe for over 50 years I started by cutting a 24 thread on a $\frac{1}{2}$ rod and did a perfect job, but it was months thereafter before I could again make a usable screw. Have not done much in line with mechanical engineering for a long time, except a little consulting after my retirement in 1938, and even that I dropped. Five years ago I called on a teacher I had in high school. She was 94 and recognized me when I told her my name. She spoke very nicely about Charlie Locke who was in the class with me. My travel days are about over. Doctor told me to keep out of planes and away from the water, and I don't like railway trains. Mrs. James and I went by auto to California three years ago. We were not fatigued but we did no driving. We still have two cars but do no long-distance driving."

Jacob writes, "The unfolding of this young life began in February 1873 in the fishing metropolis of Ogunquit, Maine; but my later youth was spent in delightful Portsmouth, N. H., preparing for M.I.T. with Charlie Locke, Charlie Moat, and Walter James who all 'passed.' At the Institute, Bobbie Richards, Dick Lodge, Heine Hofman, Getty Lanza, and other instructors catered to our mental wants. I think the tuition was \$200 a year. 'Mens et Manus' was the order of the day. All things come to an end, and so with sheep skins waving we critically sized up the throng of seekers for our services. I stayed with the Institute at \$400 for the first year, rising grandly to \$500 the second, \$700 thereafter offered. But others were bidding for my services; Nathan Frederick Merrill, M.I.T.'70 and Heidelberg Ph.D., was head of the chemistry department at University of Vermont, a charming man who had no difficulty in commanding my services — and I have been there ever since. The University had 476 students in those days (about 3,000 now). It was a typical small university with a small but good faculty; Merrill — Heidelberg, Tupper — Johns Hopkins, Torrey — Harvard, and others. The university sitting on the shores of Lake Champlain and backed by the ranges of the Green Mountains is unsurpassed, in my judgment — I have never cared to live elsewhere. I have been married twice but both my children died in infancy. Vermont is growing very fast and bids fair to become a large university — more's th' pity."

From a Florida resident, Irving S. Merrill: "I spent most of my active life in developing the process and apparatus for the production of powdered milk. About 30 years ago my health had failed, and the others interested in the business not wishing to continue, the business was sold to the Borden Company. At that time I sold my other interests in Syracuse and moved to Florida, where I have lived quietly ever since. I am fortunate that my three children married here. Now there are five grandchildren and two great-grandchildren living near me."

Newell sends word from Oregon that he remembers Locke and Rockwell: "There is little to add to the record you have about me, I joined Mr. Lyon on a relocation survey of a part of the Erie Railroad. Howard also was in the party, and he remained with the railroad, his major being railroads, and finally got to the top. After about three months with the railroad I returned to Boston to work for the Transit Commission. About June 1897 I went to the Army engineers stationed at Boston on rivers, harbors, and fortifications. In January 1902 I was transferred to Ft. Stevens at the mouth of the Columbia River on similar work. In May 1903 I went with the Reclamation Service and was with that organization for 26 years. For 11 years I was manager of the Umatilla project, Ore., and for a similar period on the Klamath Project, Oregon and California. March 1930 I reported at Vicksburg, Miss., to make an investigation of possible irrigation projects along the Red River in Oklahoma and Texas. I was in Vicksburg about one year; and that about covers my work in engineering. I was married in 1905, and my wife died 12 years ago. I have a son, Herbert, Jr., who works in a legal capacity for the State of California. During summers for 10 years I visited the National Parks in the western part of the United States. The winter of 1941-1942 my wife and I spent three months in Mexico. Since July 1942 I have lived in Portland, my health is excellent, I look forward, not back."

While writing these notes, Dr. John, as he is known at the Alumni, phoned to say that he and Fred Damon are doing very nicely. — JAMES M. DRISCOLL, *Secretary*, 129 Walnut Street, Brookline, Mass. HENRY R. HEDGE, *Assistant Secretary*, 105 Rockwood Street, Brookline 46, Mass.

1897

When this copy of The Review is issued, our 60th Reunion will be a matter of history. These notes, furthermore, are written before our circular letter concerning the reunion will be mailed to all members of whom we have record and address, some 70 in all, including special students assigned to our Class.

We received the following letter, dated April 12, from Tom Weymouth, and we were pleased to learn he would be among those present: "It is with much pleasure and anticipation that I write to tell you that I am counting upon being in Boston this year for the reunion. I am planning quite an extensive tour for a youth of my tender years which will encompass a journey, by auto, with my son and his wife to Staunton, Va., to witness the graduation of my grandson from the Staunton Military Academy, after which we will pick him up and drive via Williamsburg, Va., and New York to Boston to see his sister, my granddaughter, graduate from Garland Junior College on June 6. I will then send the family home to Bemus Point, N.Y., while I will remain in Boston for our reunion on the 10th or 11th. I am expecting to put up at the Somerset Hotel, and would like to get in touch with you before the reunion if possible.

"I had the great misfortune of losing my dear wife three years ago and am

therefore not qualified to express an opinion on the desirability of including the wives in the celebration. I have not heard from George Wadleigh for two or three weeks, but the last time we talked he expected to go with Eleanor. Will get in touch with him this week."

George Wadleigh, another one who will be with us, writes under date of April 26: "This is a *too much* delayed answer to your 'circular letter of May 11' to the Class, which is a good one. It covers the whole matter well, and I hope will draw a goodly turnout. On my 'agent' appeal for Alumni funds I'll urge attendance as well as Fund contributions. That is supposed to go out about May 1. Talked with Tom Weymouth on Wednesday. He will stop at the Somerset, getting there ahead of our time due to see a niece or so graduate prior to the 10th of June. Eleanor and I will probably stop at Bellevue as our more usual place in Cambridge has no room. We will not want to stay in Dedham. No more for present."

Charles Currier and your Secretary Pro-tem attended the monthly luncheon of the M.I.T. Boston Lunch Club at Union Oyster House on April 18. The speaker talked about the increasing use of digital computers in business offices, and that portion of his remarks that was not far over our heads was truly interesting. Having retired from business we mutually decided not to buy one, however.

The Alumni Association has advised us of the death on March 9, 1957, of Jesse W. Shuman of Minneapolis. He was in Course VI and received his S.B. degree with our Class. He apparently followed his profession until his retirement, and it will be recalled he wrote a letter for the Class notes within the past year.

The following changes of address were also received: Henry M. Loomis (Course V), 2853 Ontario Road, N.W., Washington 9, D.C.; Fred D. Fitch (Course IV), Westport Point 45, Mass. — JOHN P. ILSLEY, *Secretary Pro-tem*, 26 Columbine Road, Milton 87, Mass.

1898

Members of the Class will readily call to mind the solicitude of the secretary to include in the Class notes adequate descriptions of the life and activities of those classmates who have recently passed on. For those conspicuous in the public eye it has been comparatively easy; for others it has required the help of personal friends who were familiar with the life of the classmate and could prepare a suitable write-up. Through the courtesy of Professor Avery A. Ashdown and of Professor Ralph C. Young, two friends of Professor Arthur A. Blanchard, such a write-up was prepared and published in the May, 1957, issue of *The Nucleus*, the organ of the Northeastern Section of the American Chemical Society, of which Professor Ashdown is editor.

It is a fitting tribute to an illustrious member of the Class. Further, through the kindness of Professor Ashdown and of the publishers of *The Nucleus*, we were able to secure reprints of the article to mail to members of the Class and to members of the Blanchard family. As many friends of Professor Blanchard at M.I.T., and espe-

cially his students, will be interested in the write-up, we are including it, in part, in the '98 Class Notes. The article covers about four and a half pages in *The Nucleus*. A splendid full-page picture of our classmate, alert and vigorous in the prime of life, precedes a description of his life and activities by Professor Ashdown.

"Arthur Alphonzo Blanchard was born in Boston on May 4, 1876, the centennial year of the Declaration of Independence. This coincidence was prophetic in that Arthur Blanchard always had a very strong love for his native land. He was the son of Adolphus J. and Louise Rand Blanchard and thus came from one of the oldest of New England families.

"His secondary education was acquired in the Newton High School. College days were spent at the Massachusetts Institute of Technology, then 'Boston Tech' on Boylston Street. While a student at M.I.T. he took part in such sports as hockey and the high jump in track events. He was made a member of the honorary student chemical society, K₂S. (the Kidder Chemical Society, so named in honor of Jerome George Kidder whose 'generous gift, in 1883, provided the earliest adequate facilities for teaching the fundamental subject of chemistry'). He was to live long enough to see his old college home erased from its Boston site and the new Technology housed in its stately buildings on the north bank of the Charles in Cambridge.

"Not only was he to see all of this change. He was to be a part of it and to help in building up instruction in chemistry at his Alma Mater. In all, a span of nearly 40 years was devoted to teaching and research in inorganic chemistry in M.I.T. After reaching the age of retirement in 1941, he carried on in his field for yet another five years. Even after the age of 70, when he had withdrawn from all participation in the work at M.I.T., he maintained relations with old and new friends and associates, particularly with the staff of the Chemistry Department. In fact, he continued to take an active part in the life about him almost to the day of his death. He died at his home in Brookline, Mass., early Sunday morning, March 25, 1956, just 40 days short of fourscore years of age.

"Following graduation from M.I.T. he was an assistant in theoretical chemistry, being associated with Professor Arthur A. Noyes. In 1900 he was awarded a fellowship for graduate study in Germany. He thus became a member of that large body of young American scholars — 50,000 in number — who, up to the war in 1914, pursued postgraduate studies in the great European Universities. Germany received the latest group. Blanchard chose Leipzig where Wilhelm Ostwald's laboratory had become a Mecca for students wishing to study chemistry from the physics point of view.

"Returning to America in 1902, his first position was that of an instructor in New Hampshire College, now the University of New Hampshire. Back at M.I.T. in 1903, he continued his career in teaching and research with the single break of a leave of absence in 1937-1938, until retirement in 1941. He was made a full professor of inorganic chemistry in 1931. His teaching was characterized by the desire to be clear,

to be understood, and to be helpful to his students. He spent many hours in the laboratory. Perhaps his best known book dealt with synthetic inorganic chemistry written for first-year college students. First appearing in 1910, it held its own through five editions and revisions, the last appearing in 1936. *Foundations of Chemistry*, co-author Frank B. Wade, was used widely in secondary schools. His concern over being understood prompted him to ask often if he could be heard by students sitting farthest from him. His speaking voice, being a very clear baritone, makes it seem certain that students had no difficulty in hearing every word.

"Some appreciation of the personal attributes of Arthur A. Blanchard may be gained from a brief survey of aspects of his life outside the classroom and laboratory. On August 8, 1905, he was married to Miss Eugenia M. Lord, an accomplished pianist, whom he had met during student days in Leipzig. There were four children in the family; Shirley Louise (Mrs. William Hammond) of Scarsdale, N.Y., Helen Lord (Mrs. Frederick D. Cowles) of San Marino, Calif., Malcolm A. Blanchard of Portland, Ore., and Dr. Joseph Blanchard, of Mt. Kisco Hospital, North Westchester, N.Y. Mrs. Blanchard still occupies the old home in Brookline, Mass., spending the winter months at Mountain Park, Fla., as was the custom of the Blanchards over a period of years. Their summer home was at Marshfield, Mass., on the South Shore."

Thereafter follows a compilation by Professor Young of the publications of Professor Arthur A. Blanchard; forty-three in all, comprising articles in scientific magazines, national and international, and numerous text-books relating to chemistry. References are complete, giving the names of articles and of text-books, with co-authors if any; the names of magazines and publishers; and the dates of publication, with special references where required. Truly, a monumental and painstaking compilation. The compilation occupies two and a half columns of fine print in *The Nucleus* and is too extensive to be included in the Class notes. However, we have a limited supply of reprints and will gladly mail a copy to anyone writing for it.

We wish to thank Professors Ashdown and Young, personally and in the name of the Class, for their labor of love. We wish that we could find friends equally devoted and competent to write about other classmates who have passed on, concerning whom we have been able to secure little or inadequate information.

New addresses: Roger W. Babson, 90 Seaward Road, Wellesley Hills 82, Mass.; David C. Fenner, Counting House Way, Falmouth, Mass.; Abraham French, General Delivery, Bath, Pa.; Frederick C. Gilbert, 1471 E. Johnston Avenue, Hemet, Calif.; Robert Lacy, Squirrel Island, Maine; Willard B. Nelson, 621 De Mott Avenue, Baldwin, N.Y. — EDWARD S. CHAPIN, *Secretary*, 2 Gregory Street, Marblehead, Mass.

1899

John B. Ferguson, head of the J. B. Ferguson Company of Hagerstown, Md., construction engineers, has retired, ac-

cording to *The Daily Mail* of April 10 for that city. In taking this step he turned over 25 percent of the stock of the company to a number of long-time trusted associates as a mark of appreciation for the way they had carried on the affairs of the company. Ultimately, the bulk of the stock will be turned over to them. The company was established originally as a partnership in 1909, as an individually-owned company in 1920, and as a corporation in 1954. A record of the construction work of the company carried on in the past or now in process occupies over half a column in the newspaper.

John was city engineer from 1914 to 1927. Also in 1914 he was made chief engineer of the sewerage commission, a position he held until 1925. He was elected county surveyor in 1916 and held that office until 1930. When the first World War broke out, the company was appointed supervising engineer of Camp Eustis and road projects on the Virginia peninsula — a \$20,000,000 project. They were also supervising engineers for the Clear Spring Proving Grounds. John is a member of the American Society of Civil Engineers, the Newcomen Society, a Fellow of the American Geographical Society, trustee and secretary of the Washington County Museum of Fine Arts, charter member of the Hagerstown Rotary Club, County chairman of the Committee for Economic Development, and director since 1938 of the Western Maryland Railway Company. He was president of the Washington County Council of Boy Scouts from 1927 to 1938, president of the Chamber of Commerce from 1930 to 1939, president of the Washington Free Library from 1941 to 1946, and trustee of the Library from 1916 to 1956.

Carroll W. Brown, who wrote his thesis with Ferguson, also lives in Hagerstown and is now serving as inspector on a million-dollar high school building in the northern section of the city. He is also supervising repairs to the old Brown homestead at Rye Beach, N.H., to which he hopes to retire eventually. — **BURT R. RICHARDS, Secretary**, 173 Edgewood Avenue, Pleasantville, N.Y. **MILES S. RICHMOND, Assistant Secretary**, Little Compton, R.I.

1901

Will Kelley, VI, of Wilmette, Ill., says that he and Mrs. Kelley are taking a trip to the South Pacific in June to be gone all summer. He encloses a notice from his church which tells of a sound system given to the church by Mrs. Langdon Pearse in memory of her husband. One of our most distinguished classmates is Dr. William J. Brickley, II, who has been medical examiner in Suffolk County, Mass., for 37 years and is retiring this year. Accounts of his career have appeared in the Boston newspapers and they make a very exciting story. His engineering education, acquired at M.I.T., as well as his medical knowledge helped him to assist the police in solving many cases, some involving murder. He has made an enviable reputation.

J. P. Catlin, VI, is still active as president of the Virkotype Corporation of Plainfield, N.J. He spends about half the time in Florida. His business is operated

on a profit-sharing basis with all employees. He is now living with his second wife to whom he gives the title of "Chairman of the Board." Winthrop St. Clair, IV, Boston, is still general manager of the Sturgis Associates, Inc., Architects, and is too busy to retire although he spends some of the winter in Florida.

Phil Moore, with his wife, spent two months this winter in the Southwest as usual. He writes: "I am entirely out of any business activities as of this spring when I finish up my service on the last two boards on which I have been a director. In one case, 51 years, ever since the predecessor of the present Poor and Company was organized, and in the other case, a term of 25 years, ever since the Chicago Mill and Lumber was reorganized. I have enjoyed the experience and am glad to make way for younger and more active persons."

I have a reply from Greta Gray, IV, who, as you will remember, has suffered with rheumatoid arthritis for a long time. We are glad she is able to send us a reply. Ed Seaver, II, spent the winter in Florida as usual, and every Wednesday had the pleasure of lunching with Bill Hogle and his wife.

I have a report that Robert H. Brown, XI, died at Mineola, Long Island, N.Y., on April 6, 1957. The information came through the Alumni office from his niece who wrote that Mrs. Brown is unable to see to read or write but gave no further information.

You have all received the letter from the committee on an interim reunion. Won't you have the courtesy to reply. No further Class news until November. I am looking for more replies to the Class Letter. — **THEODORE H. TAFT, Secretary**, Box 124, Jaffrey, N.H. **WILLARD W. DOW, Assistant Secretary**, 78 Elm Street, Cohasset, Mass.

1902

It seems inevitable that again the Class Notes must record the passing of more of our classmates. On April 6, 1957, Harry B. Canby, a life-long resident of Dayton, Ohio, died after a month's illness. For years he was associated with the sporting goods firm of Crawford, McGregor, and Canby Company, which he joined in 1903 after completion of a trip around the world. In 1919 he became its president and remained at its head until 1936 when the firm was sold to the Goldsmith Company of Cincinnati and he retired. He always took an active part in civic affairs of the city and served for many years on the board of trustees of the local Y.M.C.A. and headed the board for three years. He was likewise a member of the first board of the Community Chest and served many years. He was very active in the affairs of the First Baptist Church, the Dayton Foundation and the Rotary. An engineer by training, he was a charter member of the Dayton Engineers Club, and a life member of the American Society of Mechanical Engineers. Canby is survived by his wife, Hannah P. Canby; two daughters, Mrs. Howard N. Smith of Dayton and Mrs. Richard S. Fowler of Chicago; and a son, Edward, of Palm Springs, Calif.; and nine grandchildren.

Wilbur L. Vatter died after a two months' illness on April 24, 1957, in East Orange, N.J., where he had lived for many years. Vatter joined up with the American Tel and Tel soon after graduation and remained in its engineering department until May 1911 when he entered the employ of the Western Union as division supervisor of equipment — Eastern Division. This covered all the territory east of Ohio, south to the Virginia line, and included West Virginia. He held this position working out of New York until his retirement in 1947. He was a member of the American Association of Electrical Engineers, and belonged to the Christ Episcopal Church and the Hope Lodge, F & AM, both in East Orange. He is survived by his two daughters, Barbara F. Vatter of East Orange and Mrs. Robert Dillard of Bloomfield, N.J.

From the Alumni Office comes information received from his son that Waldo H. Comins, Course III, died July 26, 1956, at St. Louis, Mo. Although we have had no recent information, our Class records show that for three years after his graduation Comins followed mining in Mexico, and then in 1905 became associated with the Desloge lead mining interests in Missouri and remained with them in various capacities.

Our next Class notes will report upon the events at our 55th Reunion which is still in the future at the time this is written. — **BURTON C. PHILBRICK, Secretary**, 18 Ocean Avenue, Salem, Mass.

1903

Another member of the Class, David S. Reynolds, Course II, succumbed to a long illness on March 31, 1957, after five and a half months of hospitalization. Prior to that time he had been very active as the New England representative for the Gas Machinery Company of Cleveland, Ohio, for about eight years. Previous to his retirement in 1947, after 44 years of service, he was vice-president, chief engineer, and assistant treasurer of the Boston Consolidated Gas Company. He was a former president of the New England Gas Association and of the Guild of Gas Managers. At one time he was on the Alumni Visiting Committee for Mechanical Engineering at M.I.T. He is survived by his son, Hereward A. Reynolds of 69 Clarke Circle, Needham, Mass., to whom we are indebted for this information.

Benjamin D. Solomon, VI, who added law to his scientific training, is now living at 1818 Commonwealth Avenue, Auburndale 66, Mass. We wish to congratulate Howard S. Morse, I, on rounding out a year as chairman of the Board of the Indianapolis Water Company. As chief executive officer for more than 30 years, he brought about many significant improvements, including the completion of Morse Reservoir, which was made available for recreational purposes in Central Indiana, and postponed the threat to water shortage in this area for many years to come.

Your secretary would welcome reports on summer activities, travel, or other items of interest to our classmates. September 15 is the deadline for the next issue of *The Review*. — **LEROY B. GOULD, Secretary**, 36 Oxford Road, Newton Centre 59, Mass.

These notes are being written in May for the July Review after which there will be no more issues until fall. We hope you will have a pleasant summer and will send us some items regarding your activities.

Maynard Holcombe has sent us a newsy letter about the Florida contingent, as follows: "I was greatly shocked to learn recently of Henry Stevens' death. I had a letter from him in March written in his usual good spirits about some of the Class who might be in Florida, and I had intended reporting to him the results of our '04 party at Winter Haven—I did send him a card from there—at which Guy Palmer took some pictures. We had expected Gus Munster, but he got sick in Orlando and had to go back home, and Currier Lang, who caught laryngitis in Palm Beach and laid up there. Lewis Newell and A. L. Coupe, with their wives, were the only ones who made it to Winter Haven besides Guy and me (and our wives). But we had a jolly time. I saw Fred Pierce recently in St. Petersburg. It seems that he comes here every winter to play shuffleboard and a little bridge. He looks well but it quite deaf. I hope to see more of him next winter. He and his wife summer at Baker's Cottage, Yarmouth Camp Ground, between Hyannis and Yarmouthport, on Cape Cod. We may see them there this summer, as we will probably visit the Cape. Martha and I are leaving next Monday for Washington for three months. Our address there is 1500 Massachusetts Avenue, N.W. (Apt. 461). We intend to give up our apartment there, however, and spend the time when we are away from Florida trying to keep up with our nine grandchildren, who are scattered from Pennsylvania to California and Hawaii. Please tell Mrs. Stevens that we remember her with pleasure and sympathize deeply in her loss—indeed the Class has experienced a loss that it will be hard to fill."

Bernie Blum reports as follows from St. Paul, Minn.: "It was good to get your Class letter of April 1 but sad to hear of the passing of Henry Stevens, Paul Paine, and Elmer Holbrook. Henry was a brave soul, and I know all his classmates were fond of him as I was. He did much to keep the Class together and he will be greatly missed—a big void is created. I am glad I attended the 50th so I could see and talk again to our missing members. Lillian and I returned a few days ago from Phoenix where we spent three and a half months in very pleasant sunny weather. We plan to spend the summer months in Victoria, our usual custom. 120 Beacon Street sounds very interesting—it cannot be very far from the State House, and I was glad to note in 1953 that the street has maintained its old-time dignity and evident culture. I have noted and acted on your reference to the Alumni Fund. Lillian joins in sending kindest regards to Mrs. Hayward and yourself."

We also have a letter from Warren Batton of Pittsburgh as follows: "Read your April 1 Class letter with interest. When it came I was about to take a trip out of town or would have written you. The death of Henry Stevens, whom I knew only by rare correspondence, was some-

what of a shock. When Elmer 'Shorty' Holbrook passed, I had sent an obituary clipping to him and received a very gracious note of acknowledgement from him. You, too, may not recall me as being in 1904 at M.I.T. I was registered in Course XI, Sanitary Engineering, and took courses all over the place. Did not take a degree but have always considered my class as 1904. Much of my work at Tech was in the Biology Department where I knew Dr. Sedgwick well and also Sam Prescott and Charles Winslow, who were instructors in those days. Early April I had a two-week trip to Florida, and while there visited Miami. Took in the American Chemical Society Annual Meeting where about 60 of us young members received citations for 50 years of continuous membership completed as of January 1, 1957. I still put in a little time as associate director of Baton Analytical Laboratory which provides laboratory service for physicians and engineers. A native of New England, I hope to re-visit sometime in the not-too-distant future, but not in June much as I would like it."

A card from the Phinneys announces a safe arrival in India and an interesting time there. Bill Eager writes as follows: "Here is something besides a death notice for our column in The Review. Mrs. Eager and I just celebrated our Golden Wedding Anniversary yesterday at the Statler Club here in Ithaca where we are now living. Thirty-four guests were present at dinner, and we had a lovely evening." Thanks to all four of the above for furnishing news items.

As these notes are written, Gene Russell and wife are driving to Chicago for a visit with a daughter and family, and a week ago Carle Hayward and wife returned from a trip to Michigan, part of the time being spent on a consulting job in the northern peninsula and part in Birmingham, Mich., visiting a son and family. An unsuccessful attempt was made to contact Frank Davis by phone. — EUGENE H. RUSSELL, JR., *Treasurer*, 82 Devonshire Street, Boston, Mass. CARLE R. HAYWARD, *President*, Room 35-304, M.I.T. Cambridge, Mass.

1905

Maybe I've found the answer to the age-old problem of the Class secretary of getting news for The Review. In appreciation of a wonderful basket of grapefruit received from Willard Simpson during the past winter, I sent Willard a gallon of A #1 Vermont Maple Syrup. Immediately he wrote me a three-page letter, which I here quote in part, with its varied interest: "The real reason for this letter is the receipt from you, as per your letter of April 29, of a most delicious gallon of real maple syrup from Vermont. It is sure good. You know that is something we never see down here. If we get real Vermont syrup it seems to have been diluted with water to where it is just a watery substance with just a little taste of maple syrup. This rich, creamy syrup which you sent me certainly is delicious, and because it is so good, I am sharing it some with my son, Willard, and his three little children who just crave maple syrup—good maple syrup."

"Mary and I don't get away from home

very much and not for long trips like way up to Boston. We do go to our summer home, a little ranch, up at Boerne during the months of June, July, August, and September, and part of October each year. It is so close that I can drive up and back from the office every day, just a 45-minute drive each way. Up in your country, you don't think anything of spending 45 minutes to get home. Well, we are getting that way down here now. This city of San Antonio is expanding marvelously. Two of the men in my office actually live in the city limits in homes eight miles from the center of town. My house is five miles from the center of town. Boerne, where I have a little ranch home, is only 30 miles, and I am constantly saying that the first thing we know, the city of San Antonio will extend to the boundaries of Bexar County which will be within about five miles from my place in Boerne.

"I am kept reminded of the marvelous expansion of San Antonio because of my service on the City Public Service Board, which owns and operates the gas and electric systems. Of course the gas and electric systems are really owned by the city of San Antonio. Four of us chosen are a non-political group who administer this. Now our demand for electric power has been increasing an average of 16 percent per year compounded for the last six or seven years. This town is really growing. Well, that is the way the whole of Texas is growing, but then there is Texas bragging again.

"Well, we are in particularly fine shape now. It has been variously estimated, but I will say that it has been five years while some say seven years of drought in this whole part of Texas, and I say drought really dry, with only seven, eight, or nine inches of rain for the last five years. Even our wonderful live oak trees, the sturdiest trees, began drying last summer. Now, since the first of the year, we have had 19 inches of rain. Nine inches fell during April, and the country is in beautiful shape. The wild flowers are particularly so. You know down here we grow wild flowers in mass—not all mixed together. You will see a field of 30 acres of solid blue bluebonnets and not far from it another solid area, of even greater extent, of beautiful lavender verbenas and solid areas of the purple—red wine-cup and golden daisies, looking very much like a great artist palette with large areas of blue, lavender, red, and gold. You have been down here. Probably you have seen it, but as I remember that last time you were in Houston was within this seven-year period.

"Of course when the weather is good, business is good, and we are kept very busy. Our office is small and we do much overtime work because good, efficient trained engineers are hard to find. You know when we were at M.I.T. we were taught that we had to start at the bottom and work up and work hard and really had to study to become real engineers. My golly, it seems to me that the professors around here are just teaching the boys to become masters, get master's degrees, and draw down a great big salary and do nothing. A boy was in here not long ago, and I told him, 'Your master's degree will be gotten right here in this office. The

extra time you spend at the University of Texas or A and M College won't do us a particle of good,' and he was quite disappointed because he thought he could just step into the office here. In fact, I think he thought he could step into the office and be the manager. I am still hoping that something might happen so that I might come up to the reunion this summer in June. I would sure like to attend another graduation ceremony and Alumni Day at old Tech. I would certainly look forward to meeting the fellows in our Class again. About all you write in the Technology Review is about men who have retired. Golly, I haven't been able to retire yet. I not only have to see that this office is run properly and we get jobs and get paid for them, but I have a drawing board like everyone else. I don't want any of the men to feel that I can't step right in there and do like they can and just as well as they can and just a little bit faster. Maybe that is egotistical, but it is a fact just the same. I sure enjoyed the chat with you, and I sure hope to see you again with the rest of our classmates."

T. P. Moorehead, I, writes from 150 Cross Road, Oakland 18, Calif., that a grandson will be entering M.I.T. this fall. This young man's father, Eric, graduated with the Class of 1937. Ted writes that he has eight and a fraction grandchildren. He retired in 1948, but "always welcomes the opportunity to do a good spot of work again. Last year I was occupied for six months with my son, who is a structural engineer." Arthur J. Manson (living in Houston, Texas) writes about a photographic tour of two months in South America last fall. He took over 1,300 shots and has grouped 1,000 into six talks, which he has tape recorded to go with the slides. He adds that if anyone wants real pictures, take a "Through the Lens Tour." Bill Spaulding is back in Ontario, Box 270, Crystal Beach, for the summer.

Speaking of Kodachrome artists, Joe Daniels, III, writes (from 5816 Vassar Avenue, Seattle, Wash.), "I'm keeping occupied and busy doing nothing except weeding, working at the office a few times a week, and giving talks on Pakistan. My Kodachrome slides turned out well and I have given over 15 talks, illustrated, since the first of the year. Wallace MacBriar, II, writes, "Sorry I can't be with you, but Ruth and I shall be in Norway on that date (June 1957). We are taking a little trip; England, Norway, Sweden, Denmark, Finland, Germany, and Switzerland." These flying Macs! More power to them. The Casey Turners have returned to their home in Detroit after a winter at Vero Beach, Fla. Casey writes, "You might wonder how I get away with it (quitting business), but my son, Rod, runs the works better when I am not here to say 'No.' He presented us with a grandson last year. Now have two grandsons and four similar daughters. Not bad for a young grandfather. One of the best times we ever had was the Fiftieth."

A letter from Arthur Howland, IV, will interest those who also have been "trying too cull through the accumulations of 50 years," so I quote: "I greet you with what some believe to be the finest words possible: 'Enclosed find check.' None of them pay you for the time and effort you put in

laboring away on the behalf of other cold-blooded fish like myself, who at best can only be described as inattentive. My copies of The Review are passed over to the head of the English department of the local high school and in turn reach the Dean for the benefit of prospective students aiming for Tech. We have reached the state here of trying to cull through the accumulations of 50 years, trying to dispose of what will otherwise go to the junk pile after we have departed our lives. We are probably living what many would think was a humdrum life, as we go out very little and spend an inordinate amount of time trying to keep up with the daily chores and what have you. But we have several diversions (compiling our separate genealogies, for one) and are never bored." Art and Mrs. Howland were with us for a few hours at our 50th; not long enough to learn much of their doings since 1905.

The April 22 issue of *Cand En* (whatever that is) states that Doc Lewis, X, was the first recipient of the American Chemical Society's award in industrial and engineering chemistry sponsored by the Esso Research and Engineering Company. We have probably written many times of Doc's achievements, but this article states that "Lewis's most far-reaching development was the fluidized bed reactor which appeared in 1938; in only a few years, most reactors used previously for catalytic cracking were abandoned, and his process spiraled up ever since. Present capital investment in fluidized cat cracking plants is near \$1 billion." Now Andy Fisher comes along with an extract from the Class notes of 1911 in the April Review as follows: "Professor Warren Lewis was the only speaker [at the Tulsa Regional Conference] whom I had while at Tech. He taught us then that we would not be finding oil in the United States after 1945, or thereabouts, and prophesied we would be using shale rocks of Colorado and/or alcohols for autos in 1946." Andy is editor of our department of humor and believes that a profit is not without something in his own class.

Through the Alumni Office we learn of the death of Mrs. Arthur P. Powers (nee Helen F. Boyd), V, on April 23, 1957, and of Alonzo R. Bayne, III, on about the same date. Nothing in our records help us identify either of them. —FRED W. GOLDTHWAIT, Secretary, 274 Franklin Street, Boston, Mass. GILBERT S. TOWER, Assistant Secretary, 35 North Main Street, Cohasset, Mass.

1906

Almost mid-summer and the spring beauty I was seeing outdoors in mid-May is only a memory. So, too, is Alumni Day, and you will get that story elsewhere in this issue, probably. The November number will tell who attended with any news incidental thereto. As usual this time of year news is meagre, to say the least, but our worthy and busy president — he says he plays golf three times a week — did relay one interesting item recently. The travelling Hoefers had been in India on this safari, and back in February sent Jim a card from Dal Lake in Srinagar, Kashmir — if the spelling is correct — saying, "We have been in India nearly a month and

have been very much surprised at the progress that has been made since we were here five years ago. One of the sorest problems has been housing, with people by the thousands living in straw huts. Many states have organized housing authorities to correct this situation, and thousands of these shacks have been torn down and three-story cement apartments built, renting at 10 percent of the occupants' income. A marvelous change." Where will it be next year, Chet? — and do keep the cards coming.

In the June notes the death of Bill Englis was reported, and along in April an appreciative letter was received from Mrs. Englis, replying to our letter of condolence, and a clipping from the New York *Herald-Tribune* came through. The latter did not add much to our knowledge of Bill's career, but stated that he had retired in 1953 after 15 years with the Nassau County Department of Public Works. Mrs. Englis completed the family record: "Our son, William F. Englis, Jr., was born in 1914, graduated from Princeton in 1935, has two children; Richard William and Debora. Our daughter, Marilynn Englis Reilly, was born in 1918, has two children; Linda and Kathleen. We have been fortunate in having them all reside in Garden City, too. Even though Bill was forced to be inactive for several years, he always enjoyed news of M.I.T., especially The Review items about his classmates. He always spoke of his college years and Boston as times of happy companionship.

Ralph Patch returned to Stoneham from Winter Park back in April. Ralph is rather handicapped, and I am sure would appreciate a card from you all at 28 Lincoln Street. On May 9 came a note from Andy Kerr's wife (Clara B.) saying that Andy was in the Veterans Hospital in West Roxbury, having had a heart attack, so loyal Andy will be missed on Alumni Day. A prompt reply was sent asking her to give Andy the sympathy and best wishes from the Class, with the hope that he will have a normal recovery. Just as these notes are being assembled comes a letter from Abe Sherman (was sorry he had no news) and one from Harold Coes. He and Agnes were leaving "Thursday the 16th of May for an extended European trip. We will be away until July 25 and are going to England, the North Cape, Germany, Austria, Switzerland, and France. Will write you how it worked out on our return. I think you are doing a very fine job as Class secretary. Congratulations, and all best wishes to you both."

One address change: Ralph Jackson, IV, to 1515 W. Jefferson Street, Phoenix, Ariz., and two deaths: William I. Lourie, II, on December 11, 1956, at Belle Vista Beach, St. Petersburg, Fla., where he had been living in retirement for the past few years. The other passing is not definitely established, but has been "assumed" by H. E. Lobdell in connection with Alumni Register corrections. No address has been available for several years for Thornton M. Gilmer, I, the last being 188 Sullivan Street, New York City, so if anybody happens to know, or can ascertain more definite information, it will help to clarify the record. The November notes will contain some details of Bill Lourie's career and family, and, I hope, lots of news from the

numerous letters you will be sending in! — EDWARD B. ROWE, *Secretary-Treasurer*, 11 Cushing Road, Wellesley Hills 81, Mass.

1907

In the March, 1957, issue of the magazine *Interiors*, published in New York, is a profusely illustrated article on "Restaurants and Bars," from which the following comment is quoted: "When the ceilings of Cotillion Room, Hotel Pierre, New York, were lowered during a renovation period last summer, it became clear to architect Samuel A. Marx that the ceiling of the adjoining Oval Room, a small cocktail lounge, would appear disproportionately high. Marx's solution was the 'Birdcage,' a suspended bar which creates a second floor in what was waste space. The 'Birdcage' is suspended by means of ties; its floor follows the shape of the room below, with the bar an island in its center, surrounded by chairs and tables." Under a picture of this unusual feature is this caption: "Architect Samuel A. Marx is a graduate of M.I.T. who transplanted himself from his native Mississippi to Chicago, where he has an extensive practice. Hotel jobs to his credit include the Pump Room, Ambassador East, and the Hotel Pierre Marques, Acapulco."

Through the thoughtfulness of Fred Moses of our Class, I quote from a letter that he received early in May from Albert Burwell: "I have hoped that I would be able to attend the 50th reunion of 1907 this June, but circumstances will prevent my doing so. If you see any of the fellows who remember me, please give them my best regards. For the past two years I have been semi-retired. I go to the office for a short time most mornings but actually do very little work. Since 1909 I spent some time with Du Pont, but I have been in Oklahoma now for 36 years. Before their passing I used to see Stud Leavell and Frame occasionally. That was when I lived in Tulsa. During the past 16 years I have been living in Norman, where the Oklahoma Geological Survey is a part of the University. I am industrial chemist for the Survey. My duties have had to do mainly with mineral utilization and supervision of the analytical laboratory. Also, I have done some research with non-metallic minerals on which I have been granted four patents. As to my family, Mrs. Burwell and I have two boys and five grandchildren. Personally, I have been one of those unfortunate fellows who has had to spend considerable time in hospitals, especially during the past six years. Currently, the doctors are limiting my activities, which accounts for my missing seeing you all in June." Albert's address is 610 N. Crawford Avenue, Norman, Oklahoma.

Wheaton Griffin and his brother, Charles, were partners for 34 years in carrying on the wholesale grocery business, Griffin and Hoxie, established in 1844, located at 22-24 Catherine Street in Utica, N.Y. It has been, and still is, an institutional business; that is, dealing with hospitals, hotels, restaurants, clubs, colleges, etc. Wheaton wrote me that the business has been growing rapidly during recent years and various wholesale grocery firms have wanted to buy it. Last March 31,

R. C. Williams and Company, Inc., a New York City concern, bought it to operate as a wholly-owned subsidiary. Wheaton and his brother have retired. Wheaton's son, Frederick B. Griffin, has been appointed sales manager for the district.

Hud Hastings received a letter from Harold Libby last February which reads, in part, as follows: "I was retired on May 1, 1955, after having worked for 47 years with the Southern Railway, during the last 35 years as bridge engineer. Since then my health has not been too good, and I have been in the hospital a lot. At present I am feeling fairly well except for acute arthritis which prevents me from traveling. I regret more than I can tell that I shall be unable to attend the 50-year reunion and see my old classmates once more."

In mid-April I was tremendously surprised and shocked to receive just a bare statement from Mrs. Henry D. Loring that her husband, and our classmate, had died on March 20, 1957. Henry and I had had an exchange of correspondence in early March regarding our 50-year reunion. I wrote a note of sympathy to Mrs. Loring, and under date of April 29 received the following lovely and informing letter: "Thank you so very much for your letter, and please forgive me for having been so abrupt in notifying you. Henry's death was a shock to all of us, even to us who knew his condition. For many years he had had some kidney trouble and had been plagued by stones, but not to the point where he had to be hospitalized. We had planned to go to the Azores and to Portugal for several weeks this spring, and Henry was even thinking of writing a travel book on Portugal, the foreign country he loved best. Because of this trip he thought it would be wise to have a specialist examine him. After some X-rays the doctor thought it best to operate on Henry to remove a growth—a minor operation—and to keep him under observation for a few months. We postponed the trip until fall, and then Henry thought he would surely go to the reunion. The first 36 hours after the operation seemed very good, but a succession of chills affected his kidneys so that they no longer functioned. His blood pressure went down to nothing one morning. He died a week after the operation. At 72 and a half he appeared much younger than his age, and his mind was as vigorous, clear, original, and penetrating as ever. He was a consultant with Ferro Concrete Construction Company, where he had held several official positions, finally becoming its president, and selling it to Turner a few years ago. He was not a joiner, but in 1914 became a member of the American Society of Civil Engineers. For nearly 20 years he belonged to the Literary Club to which he contributed many papers, including studies in Italian and Portuguese literature. He enjoyed boating, gardening, and talking with his friends. He leaves two sons by his first wife, M.I.T. Alumni, Albert D. and Samuel J., both married; and a son, William D., now at Johns Hopkins, and a daughter, Margaret, now at Pembroke in Providence, R.I., who are my children." The home address is 1278 Michigan Avenue, Cincinnati 8, Ohio.

During the evening of Easter Sunday, April 21, Harry Moody telephoned to me

from his home in Lexington, Mass., to say that he had just learned that Oscar Starkweather had been found dead that morning in a bunk on his 43-foot cabin cruiser at a yacht club in Boston harbor. He was week-ending aboard the boat, preparing it for summer cruises, when his death occurred. So passes a man who never missed one of our Class reunions since 1907, and who rarely was absent from any of our Class dinners during the past 50 years. It was often said of him by his classmates that "he would never grow up," because at Class gatherings he was always perpetrating some prank which never caused either physical or mental suffering to anyone, but which brought forth much merriment. He was most popular among his mates, both during undergraduate days, where he held various committee memberships, and during all the years until his death. A graduate in 1907 in the course in architecture, he was at various times superintendent of streets in Needham, Wakefield, and Dover, all in Massachusetts, and in 1922 established his own business as a landscape architect and contractor in Needham. He was well known throughout New England for his high-grade and original type of work. He was a Mason, and a member of Needham Rotary Club since 1930. A devoted yachtsman, he was a past-commodore of two yacht clubs near Boston. During World War II he served in the U. S. Coast Guard Auxiliary commanding a flotilla. Funeral services were conducted by the pastor of the Congregational Church in Needham on April 24. The body was cremated. Dick Ashenden, Bob Rand, Harry Moody, Tom Gould, and "Kelly" Richards of '07 attended the funeral services. He was survived by his wife, to whom I wrote on behalf of our Class, two sons and two daughters, 16 grandchildren and four great-grandchildren. The family home is at 283 Marked Tree Road, Needham, Mass.

You'll have to wait until the November Review to read an account of our 50-year reunion. These notes are being written on May 14 and tomorrow is the deadline for material for the July issue. My gratitude on behalf of the Class to all of you who contributed to our 50-Year Anniversary Class Gift for the Institute. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILLIP B. WALKER, *Assistant Secretary and Treasurer*, 18 Summit Street, Whitinsville, Mass.

1908

The fourth and final dinner meeting of the 1956-1957 season was held at the M.I.T. Faculty Club, Cambridge, Mass., on Wednesday, May 8 at 6:00 P.M., with the following present: Bill Booth, Nick Carter, Fred Cole, Leslie Ellis, George Freethy, Miles Sampson, and Henry Sewell. As usual, the fellows congregated in the Cocktail Lounge, where over our favorite tonics and the bountiful buffet provided by "Mine Host" Morrison, we discussed news of absent classmates and our 49th Reunion, to be held at Harwichport, Mass., June 7-9, 1957.

Henry Sewell told us of his driving to Indianapolis during April to visit his children. It must have been a rugged trip as

he ran into snow, rain, and slush both going and returning. However, he reported the motels were most excellent, and made up for the bad weather to some extent. Two of our "regulars" were absent, and we found out later that "Bunny" Ames had not gone fishing but did not get his notice, and that Sam Hatch was visiting his son in Cincinnati.

About 6:30 P.M. we adjourned to private dining room No. 2, where we enjoyed the usual excellent dinners of our choice and the fine view, across the Charles River, of the Boston skyline. We had no Kodachromes to show as Joe Wattles was in Italy en route to the International Rotary meeting in Switzerland, so we adjourned early as some had trains to catch. The day had been fairly warm and sultry so the air conditioning at the Faculty Club was much appreciated.

Arthur T. Hinckley, Niagara Falls, N.Y., was honored on March 27 at a luncheon held at the Niagara Falls Country Club, attended by officers, directors, and other company friends at Hooker Electrochemical Company. Also present was his son, Nickerson, a chemical engineer employed at Hooker since 1942 and presently assistant production superintendent. The occasion was Mr. Hinckley's retirement on March 31 as manager of development of Oldbury Products, now consolidated with Hooker Electrochemical Company, which position he has held since 1939. In making the announcement that Mr. Hinckley will be retained by Hooker as consultant, Mr. Klaussen, President, stated that "we wish to continue to avail ourselves of the valued services that Mr. Hinckley is able to offer."

To commemorate the occasion, Dr. Earl L. Whitford, formerly president of Oldbury and now a Hooker vice-president and director, presented Mr. Hinckley with a pair of binoculars in connection with his lifetime interest in boating activities, and "as a token from his business friends and associates of many years of esteemed friendship."

Howard Luther and his daughter, Frances, spent some time at the Cloisters, Sea Island, in May. Mrs. Grace Watts and Monroe (Bunny) Ames were married on March 16 in Medford, Mass.

We are sorry to report the deaths of George R. Cooke on December 27, 1956, at his home in Grosse Pointe, Mich.; also Frank Ensign Ludington on December 7, 1956, at his home in Watertown, Conn.; and Robert B. Arnold on March 19, 1957, at his home in Richmond, Va.

The first dinner meeting of the 1957-1958 season will be held at the M.I.T. Faculty Club, Cambridge, Mass., on Wednesday, November 6, 1957, at 6:00 P.M. Best wishes for an enjoyable summer. — H. LESTON CARTER, *Secretary*, 14 Roslyn Road, Waban 68, Mass. LESLIE B. ELLIS, *Treasurer and Assistant Secretary*, 230 Melrose Street, Melrose 76, Mass.

1909

In the notes of the June Review we told of the passing of our good classmate, Horace Clark, I. We know that the Class will be interested to learn what his daughter, Joan, is now doing. As you may recall, at our 40th reunion we voted that \$500 of

the 1909 scholarship fund which the Class had accumulated should be awarded to Joan, who had already been admitted to the Institute. Also, she was present at the 45th reunion and at the Class meeting where it will be remembered she thanked us for the assistance which we were so glad to render her. In 1954 she received the degree of S.B. in general engineering, and now writes, "After graduation I came back to New York City to work again for the M. W. Kellogg Company but with a new job. This one, where I still am, is with their Technical Service Section. Our group is primarily interested in the operational aspects of the refinery and chemical plants which the company designs and constructs. Operating problems in the design stage and also from the customer are brought to this group. Not being experienced, my job is mainly composed of writing operating instructions manuals for individual units, doing surveys, and miscellaneous odd assignments — and one field trip! It's a lot of fun, and a wonderful, small group of people to work with. Amongst the after hours activities, I am beginning to get in for a bit of work on the publicity committee for the New York M.I.T. Club, and have seen a few '09ers at some of the meetings."

We have told at times of the work the Class Secretary is doing as chairman of the American Standards Association Committee C42, which is preparing the standard definitions of electrical terms in this country, and as technical advisor to the International Electrotechnical Commission which prepares the international definitions. We have also told of the important part which Phil Chase, VI, has played in this work as former vice-president of the U. S. National Committee, which sponsors the I.E.C. in this country, and now as chairman of the Electrical Standards Board of A.S.A.

Another classmate, George Gray (also VI), has taken an important part in this work. He is a member of the subcommittee which has just prepared the communication definitions which include over 1,700 terms, the largest category, we believe, and the galleys for this group have just arrived. It is also a function of this same subcommittee to review the international (I.E.C.) definitions, and make suggestions on the part of this country. George has just completed this task and his suggestions are being sent to Geneva, the headquarters of I.E.C. His long experience with the International Telephone and Telegraph System fitted him particularly well for this assignment.

George, who for many years lived in Little Falls, N.J., has recently moved to Natick, Mass. We have asked him to tell us something about himself: "After two years in Utah with the Telluride Power Company, five years of teaching (one at M.I.T. and four at the University of Wisconsin), and 33 years in transmission engineering work with the Bell System and the International Telephone and Telegraph System, I retired in 1949 to a four and one-half acre place in West Paterson, N.J., which was purchased in 1945 in preparation for retirement. In September 1955, after 40 years of happy married life, my wife passed away. In October 1956, I remarried, and early in December

moved to South Natick, where we are comfortably settled in a small ranch type of house with only an acre of land. Would be glad to have you, or any other '09ers, drop in if you are in this vicinity." As we all know, George has always been most modest and says nothing of the many important contributions which he has made to the telephone art.

We have learned of the death of Lyman F. Whitney, II, which occurred on May 4 in his 68th year. After graduating from the Institute he studied three years at the then Graduate School of Applied Science at Harvard University, receiving his master's degree in electrical engineering in 1912. Between 1912 and 1917 he was employed by Stone and Webster. Between 1917 and 1919 he participated in World War I. On his return in 1919 he joined the firm of Comstock and Westcott, Cambridge research engineers of which he became vice-president, and where he remained until his death. The Secretary knew him real well, being his instructor at Harvard, and since then has been in close contact with him. Although he did not always join our group on Alumni Day, he almost invariably attended. Recently he had been doing work on the earth satellite. For the most part since graduation he has lived at 228 Marlborough Street, Boston. He leaves a widow and a brother, William E. Whitney. Services were held in Gordon Chapel, Old South Church, Boston. We have written to Mrs. Whitney conveying the sympathy of the Class.

Another year has passed and the Class officers wish everyone a happy summer. We are most appreciative of the number of news items we have received. So long until we start again in the fall. — CHESTER L. DAWES, *Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 250 East 43rd Street, New York 17, N.Y. GEORGE E. WALLIS, Wenham, Mass.

1910

It is with deep sorrow that I have to announce the passing of our classmate, Charles C. Clark, on March 23, 1957. Charlie Clark was a very prominent architect with offices in New York City. He specialized in residential work and many of his commissions were built in Westchester County and in Connecticut.

In the May issue of *The Review*, the death of Bradley Jones was announced together with an article from the Boston *Herald*. I later received a record of Bradley's achievements from the University of Cincinnati in which I am sure every classmate will be interested. Little do we realize the special work done by many of our classmates until the records are opened after death. "Professor Bradley Jones, pioneer in the field of aviation who inaugurated the cooperative program in aeronautical engineering at the University of Cincinnati College of Engineering, died early Friday at Good Samaritan Hospital, Cincinnati. Funeral services were held Monday and interment followed in Spring Grove Cemetery, Cincinnati. Among honorary pallbearers was General James H. Doolittle. Professor Jones had been in the hospital since an acute heart attack on February 20. Since last August 1 he had

been in and out of the University's Holmes Hospital because of his heart. His only survivor is his widow, Mrs. Emily Hays Jones, 3330 Morrison Avenue, Cincinnati, Associate Professor of Nutrition, University of Cincinnati College of Home Economics.

"Professor Jones came to the University of Cincinnati in 1929 as head of the Department of Aeronautical Engineering after a colorful career in every phase of aviation from research and design to manufacture, flying, and testing of planes. He had even achieved fame in adventures afoot in the jungles of Brazil and aboard a unique non-magnetic yacht on a scientific mission around the world. A favorite with students and faculty members alike, he was widely known on the University of Cincinnati campus as a raconteur. Professor Jones' scrapbook of his venturesome life, appropriately labelled 'I See by the Papers -', opens with South American newspaper clippings from 40 years ago when he took part in a three-year research cruise for the Carnegie Institute, Washington, D.C. Last entries in the book from 1956 are accounts of his successful appearances on TV and lecture platforms, discussing his favorite subjects — space ships and artificial satellites. Those four decades in between saw his participation in events of America's burgeoning air age. Professor Jones, who helped coin the word 'aviation' to replace the erroneous 'air navigation,' wrote several books on aviation, including *The Elements of Practical Dynamics, Aerodynamics for Pilots, Aviation*, and Civil Aeronautics Authority manuals on the theory of flight, aviation, and power plants used extensively in military flight training programs. He was associate editor for *U. S. Air Services* magazine.

"Born in the Back Bay area of Boston, Mass., December 9, 1889, he entered M.I.T. at 16 and received his S.B. degree in 1910. He also held a 1914 master of science degree from Norwich University. He taught at the University of Pittsburgh, and Norwich and Lehigh Universities, and saw action during World War I. He held a commission as major in the United States Army Officers Reserve Corps (Retired). During his years on the Carnegie Institute yacht, *Carnegie*, which was charged with correcting errors on magnetic charts of the world, Professor Jones visited the then little-known Easter Islands, and at another time narrowly escaped death when he and an explorer companion were trapped in the Amazon jungles after their boat capsized. Professor Jones went to McCook and Wright field at Dayton, Ohio, as a civilian expert seven years before joining the University of Cincinnati faculty. He was navigator-observer on an historical 630-mile flight from Dayton to New York City that made headlines in January 1923 by setting a new non-stop record — four hours and three minutes — while testing a compass developed by the U. S. Bureau of Standards. That same year he accompanied Army air service pilots on history-making flights 'without landmarks,' navigating accurately by instruments alone — a new development in flight.

"Professor Jones was an associate fellow of the Institute of Aeronautical Sciences; fellow of the American Geographical So-

ciety of New York; member of the American Association of University Professors, American Society of Electrical Engineers, Explorers Club of New York City, Sigma Xi, Masonic Blue Lodge, Scottish Rite, Shriners, and Engineering Society of Cincinnati. He held honorary membership in Triangle, Scabbard and Blade, and Arnold Air Society, national student organizations. Professor Jones was considered in the field to have had significant influence on engineers. In this connection he once wrote, "The engineer must be a far greater romanticist than the poet; for while the poet has no bounds for his whimsies, the scientist must always be able to tie together his visions with clear reasons. Progress depends on creative ability, and this ability involves taking known facts and assembling them to synthesize new achievements. Schools may teach the correct basic facts from which the reasoning starts, but the individual must initiate his own dreams."

Kenneth Armstrong, who is retired and living in Opa-locka, Fla., has forsaken engineering and is in politics, running for city commissioner on the platform of "Want an efficient and economical city government?"

A few days ago Hal Manson sent me a letter he received from Frank Bell and some clippings covering the City of Dallas disaster plans. From the *Dallas Times Herald*, commenting on the report of these plans, the report called Dallas emergency rescue service, directed by General Frank Bell, "one of the best in the nation," and from the *Dallas Morning News*: "Working closely with the Commissioner's health division was its rescue service headed by General Frank Bell. All rescue service workers had elaborate training before the tornado and did their job superbly." Excerpts from Frank's letter to Hal follow: "As you can't read my handwriting I am dictating this letter, having just returned from a week with Frank and family in the Rio Grande Valley, where I did a little fishing and relaxing. Business conditions are getting tougher and tougher all the time due to government interference, high taxes, etc., and in the contracting business material and equipment prices are going up while bidding is not rising comparatively. This forces us to go out and take more volume of work at less profit, which brings on more worry. However, I guess we are doing about as well as any of the contractors in this state. I am sending you a program of our Dallas Figure Skating Club, which is my present hobby. It is one of the best relaxations I know of and can be taken just as slow or fast as one desires. As you probably read, we had a tornado here which missed us by about a mile and could have been a lot worse, but our Civil Defense and Disaster Commission, of which I am a vice-chairman (all volunteer members), had organized for situations of this kind and functioned very well."

For myself, I missed writing any notes for the June issue for the very good reason that I took an extended vacation of six weeks. The six weeks were spent mostly in travel. On March 18 my wife and I took the train for Chicago, stayed there 36 hours, and then on to San Francisco. I wanted to go to Milwaukee to see Louis

French but did not make it. However, I talked to him over the telephone. I stayed in San Francisco three days looking the place over and taking sight-seeing trips. I enjoyed the trip to Leland Stanford University. I think this college campus is most interesting and has as fine a group of buildings as any college in this country. I left San Francisco on the afternoon of March 27 on the S.S. *Lurline* for Honolulu. The *Lurline* is a fine ship, fine accommodations and service and wonderful food. The trip was very calm and a most congenial group of people was aboard. Arriving at Honolulu we took a plane to Hana Maui. It was a delightful place; a quiet resort on a tropical island, comfortable and interesting. I was definitely surprised to see large cattle ranches. There was one near the hotel of 15,000 acres and 5,000 head of cattle. I went swimming every day in the surf and it was glorious. We spent five days here and then took the plane back to Honolulu and stopped at Waikiki Beach. This was interesting but too much of a resort for a long stay. However, we enjoyed ourselves. I called on Walt Spalding who has an office for the practice of engineering and architecture. He lives in one of the most wonderful locations one can imagine. It is on the top of one of those volcanic mountains which surround Honolulu. The view is magnificent, overlooking Pearl Harbor, and the city to Diamond Head. His home is just one of those well designed houses where one can live in the greatest of comfort. We certainly enjoyed our visit with Walt and his wife. During the time at Honolulu we took auto trips through scenic mountain passes, sugar cane plantations, pineapple plantations, and made shopping tours for presents for the children and grandchildren. The trip back to the States on the S.S. *Lurline* was just as fine as the trip over to Hawaii. We stayed in San Francisco a couple of days and then took the daylight train to Los Angeles. Here on Easter Sunday my wife and I were on our way to breakfast when we met Harry Hale and his wife. Remarkable to be 3,000 miles away from home and meet a classmate who lives but 20 miles away when both are at home. We took the southern route back home, and both of us felt mentally rested and ready for another year of routine before another trip.

Since my return Walt Spalding has sent me a jacket for a book titled "The Writing Road to Reading," a modern method of phonetics for teaching children to read, by Romalda Bishop Spalding with Walter T. Spalding. — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston, Mass.

1911

Through the thoughtfulness of Bill Gilmore '13 word reached us in late April of the death of a classmate, H. Rossiter Snyder, IV, at Paget, Bermuda, B.W.I., on April 27 of a heart attack. At the time of his death he was a retired U. S. Navy Commander, and according to Gilmore, "He was a neighbor and very good friend of mine, and we often discussed old times at Boston Tech. He had been living in Bermuda for many years and enjoyed all the year 'round open-air life here. His

home was on the water of Hamilton Harbor in a lovely position, from where he could see the varied activity in the sheltered sea below him while he tended his treasured garden. He was buried in the churchward of St. James Church in a most beautiful setting on top of a hill overlooking the Atlantic Ocean. He is survived by his wife."

For many years we had him listed on the Class record as being with the R. Snyder Publishing Company in Guilford, Conn., until 1934 when we were advised he had left there, and in 1938 we learned he was living in Hastings, Barbados, B.W.I. Our next two addresses for him were successively in Guilford and Noank, Conn., just before and during World War II, after which he went to Bermuda to live, first at The Hermitage in Somerset and finally in Tyne's Bay Cottage, Paget. In expressing sympathy to his widow, we have requested a copy of his obituary to publish in more detail later.

We were indeed grieved to hear through C. R. Johnson of the death of Mrs. Burgess Darrow at her home in Akron, Ohio, in late October. "She died after a five weeks' last illness," B wrote. "It was her heart, and she had had some warning two years before. However, she was quite active up to the last five weeks — she had slowed down very little."

Darrow, Johnson, and President Don Stevens are all Goodyear Tire and Rubber Company alumni, you'll remember. In a letter to President Don, B continued: "I left Goodyear in '38, then for four years I was practically retired, but did a little consulting work. From '42 to '49 I headed up Firestone's Tire Development Department, the same job I had had at Goodyear. I left there in '49, and guess I have been retired since, although a couple of years ago I did succeed in selling a couple of tire patents — one to Firestone and one to Goodrich."

"My son has a couple of retail camera stores, and, while I am in no way in his business, I do have an office upstairs over one of the stores, so I have a place to go every day. C. R. Johnson looks me up once a year as he travels through Akron and we have lunch, but I haven't seen Johnnie for quite awhile now. I might have gone to the 45th reunion in June, 1956, but I had to be in Manchester, N.H., in August and didn't care to make two trips so close together. I'll try to make the next one!" His home address is 2826 Yellow Creek Road, Akron, Ohio.

It was my good fortune at the end of April to go to Washington, D.C. (actually my first visit there since the late '20s when I went there annually as Alumni Association executive secretary), for the four-day Annual Meeting of the Chamber of Commerce of the United States. Realizing that we had a baker's dozen classmates in the Capitol metropolitan area, I contacted two Washington "stand-bys" — architect William Dewey Foster, IV, and investment banker Davis St. Pierre Gaillard, VI. As a result of their effective grass-roots work, six Eleveners joined me at a Class dinner at the Cosmos Club, making it truly a "Seven, Come '11" affair. In addition to Bill and Pete and ye sec, there were my old Framingham High School fellow-graduate, Dave Allen, II, Dick Cushing,

VI, Bill (William Hennick) Martin, VI, and Aleck Yereance, I.

The Cosmos Club has a gorgeous new location out at 2121 Massachusetts Avenue in the neighborhood of many of the foreign embassies, and we had a fine time reminiscing together during a social hour before going to the dining room for a fine dinner. An interesting talk-around following my bringing the gang up to date on Class affairs, with emphasis, of course, on the continued fine showing of 1911 in Alumni Fund XVI. In this connection, I presented these statistics which interested all: Based on last year's Alumni Fund, 55 percent of the Class are active in its support in total. The four leading areas in percentage participation are: Metropolitan New York, 70 percent; Midwest, 68 percent; Atlantic Coast states, below New Jersey, 64 percent; and Metropolitan Boston, 58 percent. (Guess we "home boys" near M.I.T. will have to look to our laurels!)

Dave Allen reported that he had retired in 1948 after a long and productive career with the Washington Gas Light Company. He and his wife are now living about 60 miles north of Washington, on the water at Lusby, Md., which gives him an opportunity to pursue his lifetime hobby — boats. The Allens have a married son and married daughter and six grandchildren. The boy and his family live in Texas, the daughter in the Belgian Congo. The latter is presently with the Allens in Lusby with her children, and while she takes a summer course at the University of Maryland, Grandpa and Grandma will baby-sit at Lusby, Dave said.

R. W. Cushing retired two years ago as chief engineer of the Federal Power Commission — earlier reports of his retirement have been premature, he added. He and his wife are keeping busy, he says, at their home in nearby Chevy Chase, Md. — where there's always something to do around the house or about the grounds. They have one son, two daughters, and four grandchildren.

Mine host, Bill Foster, still is a confirmed bachelor, is busy in architecture in the firm of Howe and Foster there in Washington, and doesn't expect to retire for several years yet. He lives in the city — two blocks from the Cosmos Club up to his home and two blocks from the Club down to his office. (You guessed it — he drives.)

Pete Gaillard, a native of Washington who has always lived there, added a lot to the early evening enjoyment when he thoughtfully brought his Senior Portfolio with him so we could all see how we looked in those high, stiff, white collars back in 1910 or '11. Pete said he abandoned engineering 30 years ago and has been in investment banking service ever since, except for five years' service in World War II. He has a son in Washington, and a daughter in Colombia, South America. He and his wife have six grandchildren as well. His particular outside interest is sailing.

Bill Martin retired three years ago after many years of service with Bell Telephone Laboratories, but he just couldn't stand inactivity and accepted an opening in Washington, where he now says he is an habitué of the Pentagon. He is in charge

of research and development for the Army, with duties very similar to an assistant secretary, but without portfolio. He and his wife have a boy and a girl and eight grandchildren. Bill made a fine suggestion for an announcement to all classmates who have retired — "Write to Dennie" and tell him what you are doing in retirement. He is right when he says this would be most interesting, and I suggest you classmates who have retired, but are still doing whole or part time work, make it a summer chore to report your activity to Dennie!

Completing the talk-around, Aleck Yereance said he and his wife left Boston two years ago, retiring after a long service with the mortgage department of the Prudential Life Insurance Company. They have a nice home in Arlington, Va., and a summer residence in West Harwich on Cape Cod. They have one daughter and four grandchildren. Since retirement he has kept himself busy developing both his Virginia and Massachusetts houses and grounds. He and his wife, Edna, added greatly to my four-day stay in Washington by driving me around on Monday afternoon to many points of interest in and around Washington. The flowers and trees — especially the Azaleas — were gorgeous.

To conclude a most enjoyable evening, Bill Foster arranged for us to adjourn to the not-being-used auditorium where there was a piano available — I had brought some Tech song sheets with me, so we had quite a musical hoe-down, including old Tech Show and early 20th century favorite songs. Pete Gaillard drove me to Union Station at about 10:00, and I boarded the Federal and woke in Boston next morning after a fine trip.

Had a card from Seattle, Wash., in mid-April signed by Hal Robinson, I, and Bert Fryer, VI, which showed the Olympic Hotel, and read: "We are having a swell 46th Reunion of 1911 in Seattle. As a couple of retired engineers we can recommend this as an ideal way to occupy your time. Wish you were with us." Hal, who lives in Holden, Mass., was on a Pacific Coast trip and Bert came down from Carnation, Wash., to reunite with Hal.

At this mid-May writing, it is almost time for Ralph Walker, IV, to receive the Centennial Medal of the American Institute of Architects — on May 16, as announced in our April Class notes. We're all proud of you, Ralph! Another architect, Joe French of Detroit, sent me a card on May 4 from Stratford-on-Avon, England, signed "Yolanda and Joe" and telling of a fine trip they were just completing. "Yolanda and I are finishing up a two-months' trip through Europe and England with our son, Joe, Jr., and his wife. We have had a glorious time seeing, feeling, eating, and photographing — Paris, Vienna, Venice, Florence, Rome, Muchen, London, and the midlands of Old England."

At the annual meeting of American Optical in Southbridge, Mass., in mid-April, Admiral Luis deFlorez, II, and Bradley Dewey '09 were re-elected trustees. And speaking of American Optical, don't miss that movie taken in the Todd-AO photography — "Oklahoma" — never have I seen such depth and gorgeous color in a movie. Phil Caldwell, I, has sent word that he and his wife, Bobbie, have rented a cot-

tage on Millstone Road in Wilton, Conn., to stay in until their fire-destroyed home is rebuilt. Phil is still active with Robertson Paper Box Company, 420 Lexington Avenue, New York 17, N.Y.

Here's further word just received from A. T. Cushing, I: "Continued from May Review: Cush says he has found his one-story house at 6638 Bellefontaine Avenue, Kansas City 30, Mo., and will move there on May 15. My oldest son, Captain Don A. Cushing, U.S.A.F., is here with his wife and two sons for a few days collecting his belongings before we move, as he had built a home in Bossier City, La., where he is stationed."

Just under the wire for inclusion we have this card from Cloquet, Minn., dated May 8: "The Board of Directors of the Northwest Paper Company announces the election of Harry T. Kendall, Jr., as president of the Company to succeed Stuart B. Copeland [II] who retires after serving as president for 21 years." A fine record you have made, Stu. Here's hopin' your retirement is most enjoyable as a "way of life."

Since Alumni Day is still four weeks away, the story of that will have to wait until the first fall issue of *The Review*. This winds up another volume of Class notes, and again I am proud to have had something in every one of the nine issues — never missed yet! And it's you faithful classmates who support the Alumni Fund and make it a point to let me know when you hear news of interest to classmates that keeps the banner of 1911 flying high through the years. Keep it up, classmates — God bless you all! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, 109 Concord Street, Framingham, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

1912

Word has just been received of the death of James A. Tillinghast, VI, R.F.D. Saunderstown, R.I., on April 13, 1957.

A letter from John Hargraves, VI, states that he probably will not be able to get up to the reunion as he is just finishing an industrial building which is to be leased. The tenant wants to move in and John is trying to meet the deadline. He has a golf date in Highlands, N.C., on June 2, and will then drive his wife to their summer place in Michigan. He hopes to find time to detour through Massachusetts. Last year they took a trip around the Caribbean and later through the West, visiting the National Parks. John boasts nine grandchildren.

George Sprowls, VI, writes to confirm his retirement from Goodyear Tire and Rubber Company, February of this year. After taking life easy for a few weeks he has since been busier than ever doing consulting work and keeping things shipshape around the house. Last June, George and his wife visited the Hawaiian Islands and came back with a collection of third-dimension color slides which show the tropical islands to excellent advantage. George gets in a lot of golf and advises that Fairlawn where he plays has a ravine 60 to 75 feet deep which winds in and out around the course. Sounds like a lot of lost balls to me.

Vincent Gallagher, VI, who retired to Coconut Grove, Fla., a year ago, writes that he is kept busy all the time doing things that seem important to him but possibly would not to others. Several years ago he wrote two books on insurance and has spent some time recently in bringing them up to date. They are written from the buyer's point of view and enjoy a good sale. Vincent's son, who is making a career of Army life, lives nearby and has just presented them with the 13th grandchild. The other 12 are all children of his daughter, living in Larchmont, N.Y. — six boys and six girls.

Lester White, X, writes that he has been laid up recently with a mild heart attack but seems to be recovering all right. He hopes to get to the reunion.

John C. Freeman, VI, has been spending several winters in Florida and decided to purchase a home in West Palm Beach where they are now comfortably settled in retirement. They are located only a few blocks from Route 1 on the north side of the city and would be delighted to see any classmates in that vicinity. They are going to San Antonio, Texas, in May and June to welcome a new grandchild and will not be at the reunion. — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass. LESTER M. WHITE, *Assistant Secretary*, 1230 N. E. 102d Street, Miami 38, Fla.

1914

It has been some time since reports have been received from classmates with growing numbers of grandchildren. While a long way from reaching for a record, your Secretary announces the arrival recently of two more grandchildren. Our son has two sons and a daughter, and our daughter has two daughters and a son.

The only recent news during the past month is that of two retirements, but with no special plans reported for the future. Dave Gould, who has been manager of research and development at the Chemical Division of the Borden Company in Philadelphia, retired June 30. Arthur Johnson, who has been vice-president and secretary of the State Mutual Life Insurance Company at Worcester, Mass., retired this spring and is now making his home at Wolfeboro, N.H. A word to your secretary on retirements and future plans will always be appreciated. — H. B. RICHMOND, *Secretary*, 100 Memorial Drive, Cambridge 42, Mass. H. A. AFFEL, *Assistant Secretary*, 120 Woodland Avenue, Summit, N.J. C. P. FISKE, *President*, Cold Spring Farm, Star Route 3, Bath, Maine (summer address, but mail will be forwarded from 1775 Broadway, New York 19, N.Y.).

1916

And now another milestone has been passed; the 41st Reunion at Chatham Bars Inn in Chatham on the Cape, June 11 and 12. The report of the Reunion will be covered in the first issue of *The Review* in the fall. While we can't report on the Reunion, we have many other things to talk about as the result of generous response for requests for news to keep us up to date on 1916 activities.

On May 1 the Executive Committee met in Joe Barker's office in the Chrysler Building, and in the evening a Class dinner was held at M.I.T. Club of New York headquarters in the Hotel Chatham. At the Executive Committee meeting general plans regarding the Reunion at Chatham Bars Inn were discussed as well as the plan being evolved for the Class 50-year gift. Joe Barker heads up a committee formulating the general plan. There were 25 present at the Class dinner, including Bob O'Brien, Ralph Fletcher's efficient secretary, and F. S. Lincoln of the Class of 1922. Mr. Lincoln did for us again what he did two November ago — took several shots of the group collected around the dinner table; another bit of recorded history for the Class. Those present at the dinner were: Joe Barker, Bill Barrett, Dick Berger, Walt Binger, Steve Brophy, Art Caldwell, Harold Dodge, Jim Evans, Ralph Fletcher, Gil Gaus, Ping Loo, Herb Mendelson, Dave Patten, George Petit, Izzy Richmond, Stew Rowlett, Hank Smith, Francis Stern, Harvey Stocking, Len Stone, Steve Whitney, and Duke Wellington. This was one or two more than attended the last New York Class dinner, and we have a number of impressions that can be arranged as follows in the Jim Evans manner: Joe Barker with a plastered-up nose and a fairly plausible explanation; Bill Barrett wondering about 1916's future in the light of current evidence of revised life expectancies; Dick Berger with more information of success in his cancer-prevention crusade; Walt Binger and Francis Stern with exciting exchanges of tips on investment trusts; Steve Brophy with his defense of advertising's merits; Art Caldwell with everything that goes with vice-presiding a Manhattan bank; Jim Evans and his ebullient inimitable outpourings (there's only one like him, you know!); Ralph Fletcher with that something that he's always had; Dave Patten and his association with the 1957 *Mayflower*; Izzy Richmond and his aesthetic approach; Gil Gaus's continued youthful looks; and Len Stone's notion that upon retirement one should retire. Several speeches followed a husky meal; the most memorable were by Joe Barker, Steve Brophy, and Bill Barrett, and all were steered in sound directions by our worthy president, Ralph himself. An expression of good will from the New York crowd was handed to Ralph for his transmission to the Boston crowd who were to meet for a dinner at Joseph's Restaurant, Dartmouth Street, Boston (near the site of the old Tech buildings in 1916), on May 20. All agreed we should have more of these get-togethers.

Shatswell Ober writes that although he has been more or less of a non-participant in Class affairs (he made the 25th), reading the news of the Class in *The Review* and receiving pictures, etc., from the reunions has given him much pleasure. He goes on: "Honors and exciting adventures of my classmates overshadow my more routine life. My story does not change, it merely lengthens (no complaints); I am still a professor of aeronautical engineering at M.I.T., physically older, hair thinning and colorless, mentally maintaining my youth to keep pace with a changing industry and the superior students M.I.T."

attracts (about 75 of them headed our way). I see Murray Horwood occasionally. He has been engaging in a controversy in *The Tech* concerned with whether web-footed forks noticed in a dormitory restaurant are bacteriologically 'clean.'

Vannevar Bush was the recipient of the 1957 New England Award of E.S.N.E. (Engineering Societies of New England) at the Annual Dinner and Ladies' Night on April 23, 1957, at the Hotel Sheraton Plaza in Boston. In announcing the award, the April 8 issue of the *Journal of the Engineering Societies of New England* had the following to say about our distinguished classmate: "An electrical engineer, he was a member of the faculty at both Tufts and M.I.T. and also served as vice-president and dean of engineering at M.I.T. He was elected president of the Carnegie Institution in Washington, D.C., in 1938 and retired from this position on January 1, 1956. During World War II he served the United States as chairman and director of numerous government agencies organized to assist the Army and the Navy in the development of instruments of war. He was a central figure in the development of nuclear fission culminating in the utilization of atomic bombs. Dr. Bush's inventive interests have been focused on the development of mechanical and electronic computers. The network analyzer and the differential analyzer, both at M.I.T., were constructed under his direction. More recently, Dr. Bush has worked on the development of machines to facilitate biological research. Since his retirement, he has been designing and developing minute valves of gold to be used in surgical correction of brain and heart ailments."

We have additional honors to report, relating respectively to Bob Wilson and Joe Barker. At the M.I.T. Regional Conference in Chicago back in February, Bob Wilson received (in absensia) a certificate from President Miller representing the M.I.T. Alumni Association which read as follows: "The Alumni Association of the Massachusetts Institute of Technology honors Robert Erastus Wilson, Loyal Alumnus of the Class of 1916, a chemical engineer and captain of industry distinguished for his steadfast devotion to the progress of education and society." And Joe Barker was the recipient of still another honorary degree on June 8, this one a doctor of engineering degree from Rose Polytechnic Institute in Terre Haute, Ind. We have lost count of the number of honorary degrees that Joe and Bob Wilson have received. Incidentally, we can keep fair tabs on Bob by watching financial pages generally. He was quoted, for example, in the May 3 issue of the *New York Times*, when he reported to shareholders that first-quarter earnings of the Standard Oil Company (Indiana) reached a new high and sales for all 1957 also may set a record. Quoting the *Times*: "He said that the improved results for the first quarter resulted mainly from a general price increase for crude oil early in January, followed by increases in product prices. But, he added, some of these product prices already have weakened." We are glad to note that Bob has fairly well recovered from the illness he suffered last February, and as of early May he was

working somewhat more than half time. He adds that incidentally he had taken off 33 pounds and had six more to go. Then a bit of advice: "If some of you overweight classmates would take warning from this, it would be a fine thing."

As we've said before, we can almost always be sure of some bit of news of Steve Brophy if we'll just be regular about watching the advertising columns of the *New York Times* and the *New York Herald Tribune*. On the first of May, our watching was rewarded by an item in the Field Notes of the advertising section of the *Herald Tribune* which read as follows: "The Advertising Federation of America has awarded plaques to three advertising leaders who helped make National Advertising Week in February 'the most successful in history.' They are Thomas D'Arcy Brophy, Chairman of Kenyon and Eckhardt, Inc., and national chairman of the week; John J. Cunningham, President of Cunningham and Walsh, Inc., the task-force agency; and Eugene McKim, Advertising Manager of *Western Farm Life*, Denver, and Vice-Chairman of the national committee. . . ." Note, as we did, that Steve was mentioned first. As everyone knows, Steve is also very active in M.I.T. affairs. In addition to being a life member of the corporation, he is chairman of the Visiting Committee, Department of City and Regional Planning; member of the Visiting Committee, Department of Food Technology; and member of the Standing Committee on Development. We understand that he was recently elected chairman of the Board, The Society for the Rehabilitation of the Facially Disfigured.

A welcome letter from an old Course VI-er was one received from Duncan Owler in Fall River. Though he says he has nothing to report beyond what he has already sent in, many around that part of Massachusetts know that he's still president, general manager, and a director of the Fall River Electric Light Company.

Dick Berger is in the news again, this time as the subject of "Sketch Book" (a pen-and-ink sketch of a prominent individual) of the April 21 issue of the Bridgeport *Sunday Herald*. The caption under this well-sketched likeness of Dick reads: "Richard G. Berger is a confirmed bachelor, a customer's man at A. L. Kidder stock brokerage firm, an expert on antiques, a horticulturist; and head of a one-man cancer foundation. It was just 10 years ago that Dick, who once worked as a chemist alongside Thomas E. Edison, told the world that the first thing we can do for cancer prevention is to cut down cigarette smoking. He's no seventh son of a seventh son, but he is a prophet now being extolled for daring to publicize data never before told to the world. Berger is a double for Harry Truman."

Back in April we had what might be called a pair of incidents, or perhaps coincidents, in the form of news received about two classmates. Rarities, too; makes us wonder what may be the percentage figure for M.I.T. Alumni who have achieved the particular calling of these two men. What calling? The ministry! The first of these is the Reverend Edward W. Macy of East Rockaway, Long Island. He was retired as a (Line) Captain of the

U. S. Coast Guard Auxiliary January 1, 1956, in command of south shore of Long Island, appointed acting chaplain July 1956, and chaplain, April 1957 (same area). He was licensed as minister in June 1956 and ordained in April 1957 in American Evangelical Christian Churches (an association of Home and Foreign Missionaries and Chaplains — interdenominational). During the past five years Ed has done (evenings, etc.) the equivalent of three years of seminary, and hopes to get a Th.B. in June 1957. Ed has had a significant career. Outside of World War I (Major of Infantry) and World War II (Commander U. S. Coast Guard Reserve), he has been in social welfare work and is listed in *Who's Who in America*. From 1931 to 1948 he was general director of Brooklyn Children's Aid Society, with a staff of 150, and 750 children under full-time care — neglected, ill, crippled, disabled, unadjusted, and unwanted. During the past seven years he has been doing public-relation publicity and fund-raising campaigns for social welfare and religious groups — i.e., churches, etc. Quite remarkable for a Course I man, we'd say!

Around the first of May we heard from Ed Weissbach, the second of the two classmates referred to above, and understand that he had just been ordained to the priesthood at Trinity Cathedral in Trenton, N.J. In the local newspaper he has been referred to as the Reverend Edward A. Weissbach, Assistant at Grace Episcopal Church, Merchantville, N.J. He apparently was one of two deacons ordained priests by the Right Reverend Alfred L. Banyard, S.T.D., Bishop of the Diocese of New Jersey. The clipping says: "Father Weissbach will continue at Grace Church as assistant to the Reverend Albert W. Van Duzer, D.D., Rector, who presented Father Weissbach for ordination. . . . The choral setting of the ordination service was the *Missa de Angelis*, sung by a priests' choir under the direction of the Reverend John R. Wilkins, Rector of St. Andrews Church, Trenton. The Reverend Canon Raymond H. Miller, Rector of St. Uriel's Church, Sea Girt, preached the ordination sermon. The Reverend Canon Robert D. Smith, S.T.D., was the Litanist. The Venerable Christopher Nichols, Archdeacon of the diocese, was the Epistoler; the Reverend Samuel R. Knight, the Gospeler, and the Reverend Canon Kenneth R. Rodgers, Canon Residuary of Trinity Cathedral, and Father Tucker, Bishop's Chaplain. Father Weissbach became a postulant in 1953 and was ordained to the diaconate in Grace Church, October 16, 1954. In the business world, he was superintendent of equipment for the Campbell Soup Company until 1948 when he was appointed mechanical engineer. He recently retired. He is a graduate of M.I.T. with a degree of bachelor of science in mechanical engineering; is a member of the American Society of Mechanical Engineers and a registered professional engineer in New Jersey and Ohio." Ed retired from Campbell Soup on April 1, sailed with his wife for Europe on May 8, and will return to the United States on August 26 to be curate at Grace Church in Merchantville. In England he expects to be doing special work for Campbell at a proposed new plant in England. Ed notes

that Spencer Hopkins went to Europe in March, and when he returns in June he expects to retire from General Motors.

A note from Lewis Vose in Grafton, Mass., stated that he had retired from Compton and Knowles in Worcester. He's now enjoying his retirement by working part time in an outfit making duckpin setters in which Compton and Knowles have an interest.

Frank Ross writes that the only thing he can add to what we know about him "is the fact that November 1 of last year I gave up my active duties as general manager of the Factory Insurance Association and now I am on an advisory and consultant basis. So far, nobody has bothered to consult me very much, and that is fine, and I find that if they do want to consult me they can do it by phone to Florida — where I have been all winter — as well as they can locally."

Glad to have a brief word from Dexter North in Washington. Says he retired from Central Intelligence Agency at the end of 1954, and had a good seven months of travel in Europe in 1955. He summers now at Guilford, Chenango County, N.Y., and he shares a hobby of a number of others we know; genealogy. Allen Pettee reports that his new permanent address is P.O. Box 1587, Tryon, N.C. Says: "I was time to retire, so here I am, in them thar hills, with more to do than ever."

Hovey Freeman is way out ahead now if we can trust available statistics in this matter of grandchildren. He has advised us that his seventeenth grandchild arrived on schedule in April. He goes on: "We got a great kick out of a cablegram one of my other daughters who has three girls and who lives in Nassau, sent to her sister who had four daughters, the new baby being a much-wanted son. The first cablegram read 'WOW,' followed by one two hours later with the single word 'HOW.' Maybe some of your engineers know the answer to this one."

At the New York dinner in May, we heard that Francis Stern had been doing some extensive travelling during the past year so we asked him for a story. He has come across nicely, and we're giving part of the story here: "Mrs. Stern and I sailed last August on the steamship *Oslofjord*, and, after a most pleasant crossing with a splendid complement of passengers, arrived at Bergen, Norway. We enjoyed miraculously clear weather. After spending the night at the Balestrand, we proceeded northward through the fjords and by bus to Stalheim where we again 'overnighted' on our way to Oslo. We had a most pleasant reunion there with my daughter, son-in-law, and two grandchildren, who had preceded us abroad last March. My son-in-law had been invited to spend a year with Niels Bohr at the Institute in Copenhagen, and they had been on a three-week vacation in their Volkswagen-Microbus through Norway, and had arranged to meet us in Oslo. We crossed the country to Stockholm, spending a week with the children and grandchildren sight-seeing there, and then proceeded with them in their car across southern Sweden back to Copenhagen. I should like to go on record now as advocating a visit to Copenhagen as a requisite for every member of the Class of 1916. Our

last visit there had been in 1912, and it is needless to say that in the intervening 44 years, the city — in spite of its tremendous age — had taken on an entirely new aspect, and my memory had become completely void of what had happened before!" Their travels carried them into France and Italy, but we are holding out this part of Francis's story until one of the later columns this fall.

And that closes the season for the column. The next issue in the fall will give an accounting of the 41st Reunion at the Cape. In the meantime, make your Secretary's life easier by sending in just a bit of something for the column — whom you've seen, what you've done, where you've gone, how you're doing, and all that. — HAROLD F. DODGE, *Secretary*, Bell Telephone Laboratories, Inc., 463 West Street, New York 14, N.Y.

1917

Phil Watson was elected vice-president of the Manufacturers Association of Connecticut recently. Past-president of the Meriden-Wallingford Manufacturers Association and a member of the Connecticut Council for Economic Education, he is plant manager of the American Cyanamid Company, Wallingford, Conn.

Neal Tourtellotte was recently named campaign chairman of the Northwest Memorial Hospital Building Fund in Seattle. Neal became interested in hospital work when he became the official Santa Claus for the Orthopedic Hospital, a job he has been performing each Christmas since 1930. Neal is also active in many other charitable and community affairs.

Dick Catlett has moved from president of Catlett-Johnson Corporation, Richmond, Va., to chairman of the board. Dick organized the company, refrigeration and air-conditioning contractors, in 1936. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge, Mass. W. I. MCNEILL, *Assistant Secretary*, 50 East 41st Street, New York, N.Y.

1918

Among the battalions of college men who have received recognition for having accomplished something are many men of 1918. One is "Mike" Flett, known less familiarly as Lawrence H. In recognition of the magnificent cleanliness which has blessed the kitchens of America since his pioneer work on detergents, Mike was given a rousing testimonial dinner and an honorary life membership in the American Institute of Chemists. He has, as it were, cleaned up in more ways than one. A past-president of the Institute of Chemists, he has also been active in the American Chemical Society, and served valiantly on the advisory boards of *Industrial and Engineering Chemistry* as well as *Chemical and Engineering News*. In company with other classmates whose lives have run at full throttle, and who therefore prefer a cool climate to the tropics, Mike retired in 1955 to New Hampshire instead of to Florida.

Harold Miller, according to our underground, has a Beacon Street, Boston,

address, which sounds to us resplendent. Edwin Harrall has moved from Baltimore (who can blame him) to the intriguing address of Pot Spring Road, Timonium, Md., which locality, according to our Rand and McNally, is not yet sufficiently significant to be listed. Maybe "Pete" will do something about that. Ed Gore has belatedly taken Horace Greeley's oft quoted advice and gone from Port Washington, N.Y., to Dayton, Ohio. Our own address figures to remain the same until they say "*Requiescat in pace*," but, meanwhile, after a long day amid the industrial grime of a South Boston factory or a New Jersey laboratory, it is refreshing to open the trunk of the car, let a little refreshing New Hampshire air out of the spare tire, and drive home. — F. ALEXANDER MAGOUN, *Secretary*, Jaffrey Center, N.H.

1919

A recent issue of the Claremont, New Hampshire *Eagle* carried a fine picture of Dan Brown, and it bore the following caption: "Daniel Brown, President of the new Lebanon College, is a well-known Lebanon selectman and successful businessman. He is a graduate of the Massachusetts Institute of Technology." You will remember that a few issues ago we told you that Dan was striving mightily to bring about the establishment of the Lebanon College, and it is good to learn that he was successful in doing so. Congratulations, Dan, and good luck!

Harry Kuljian has broken into print again. This time in the Philadelphia *News* which carried a story of his career beginning with his arrival from Armenia 44 years ago. It is some record! Harry started his own constructing and consulting business in 1931, and his firm has since then built \$1 billion worth of projects. Twenty-five percent of the firm's projects are in underdeveloped countries. And Kuljian literally has his own "Point Four" program. We think the story an interesting one, and quote the *News*: "He is an outspoken critic of the present United States technical assistance program — as it applies to industry. His views have been printed in the Congressional Record. He has been invited to testify before the Senate on foreign aid. He thinks our aid to education, agriculture, and sanitation on foreign lands has been 'excellent' and won us many friends. But industrially, we are on the wrong track, he says. 'We are wasting an awful lot of money. Our so-called experts sent overseas don't know anything about specific projects that people need, like power plants, or certain types of factories. Our own industries should get a tax advantage for opening up foreign plants. The real know-how of American industry could be introduced overseas,' he said.

"Kuljian follows his own advice," the article goes on. "When he built his \$35,000,000 Bokaro power plant near Calcutta, India, he invited 15 Indian engineers to study with his firm. *The plant, largest of its type in Asia, is now run not by Americans but by Kuljian-taught Indians.*" (The italics are mine — E.R.S.)

Harry's firm has branch offices in Iraq,

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Venezuela, India, Pakistan, Nicaragua, and Italy. A nucleus of the staffs there are American. The rest of the technical people are natives of the lands where the work is going on. He believes that this country has a 50-year obligation to the "dark corners of the earth," and says, "We can't sell democracy to people who have empty stomachs." The article closes with mention of the fact that Harry Kuljian has made 17 trips around the world, and has visited almost every country but South Africa. He's going there next fall!

We've a new address for Eli Ettlinger. His firm, called Drazen-Ettlinger Engineering Company, is now located at 7912 Bonhome, St. Louis, Mo. How about a line from you, Eli, about yourself and family, and anything you may have heard from or about some of our 1919 classmates? Which reminds us! We have to receive news items before we can write them up for *The Review*. Won't you please get out your pens and let us know what you are doing — and when you get a card once or twice a year asking for news, please let us hear from you.

Your Class Secretary has just been honored with election to the post of president of the M.I.T. Club of New York. If you are not already a member, I hope you'll soon join. We've a fine Club, and it would be wonderful to see all of the Class of 1919 appearing in our Club membership roster. — E. R. SMOLEY, *Secretary*, The Lummus Company, 385 Madison Avenue, New York, N.Y.

1920

It gives me pleasure to report that our popular and distinguished classmate, Flossie Fogler Buckland, is hitting on all eight, as usual. Not long ago she engaged in a public debate with Mayor Samuel Stratton of Schenectady at a mass meeting of taxpayers on the subject of the city manager form of government. Flossie was a member of the executive committee of the Charter League which was instrumental in switching the city's government to the city manager type. The Mayor took the other side of the argument, and it would be interesting to know who won. As may have been previously mentioned in these notes, last year Flossie was awarded the Women's Badge of the Tau Beta Pi Association of the National Honor Society. She was at one time president of the League of Women Voters, and she continues to teach a Sunday school class. Her husband is a General Electric engineer, her son, Lawrence, is an engineer with the U.S. Air Force, and her daughter is married to an engineer. Her home is at 1711 Randolph Road, Schenectady, N.Y.

Another distinguished classmate, Admiral Ned Cochrane, has announced his retirement as vice-president for Industrial and Government Relations at M.I.T. in July, but I am happy to tell you that he will remain at M.I.T. as a special advisor to Jim Killian. Bill Dewey, who has been connected for 34 years with the Acushnet Processing Company, New Bedford, Mass., and who is with the engineering firm of Anderson-Nichols and

Company of Boston, recently addressed the Fall River-New Bedford Chapter of the National Association of Cost Accountants on the subject of the Texas Tower.

Will Boyer has moved from Albuquerque to Santa Fe, N.M. "Count" Dumas may now be found at 940 Brown Avenue, Quebec. Dr. John L. Keats has moved from Asheville, N.C., to Santa Barbara, Calif. Tom Orchard has moved from Providence to Cleveland Heights, Ohio. Nick Smoley is with the Lamp Division of General Electric Company, Ft. Wayne, Ind.

It is with sorrow that I must report the death of two classmates; Harold L. Stark of Aurora, Ind., and George T. Corr of Brockton, Mass. George was connected with Charles T. May Company and was consulting engineer for the new East-West Toll Road in Massachusetts.

Just as these notes were going off to the printer, your secretary received a heart-warming letter from good old Hank Couch, and it deserves quoting almost in its entirety. I am earnestly hoping that you will give it a careful reading and that it will succeed in shaming you into writing your faithful but neglected secretary.

"The first thing I do when *The Review* arrives is to open it and read the 1920 class notes. I never miss the notes because it is always interesting to get a little news of my classmates. I wish there were more news about them, and often think that if it weren't for you there would be no news at all. Whatever their virtues, the members of the Class of 1920 do not seem to be noted for correspondence with their Class secretary. The May issue of *The Review* came today, and, as I read your interesting notes, it was quite evident that you were the source and origin of all the information published.

"My wife and I were in Boston for the 20th M.I.T. Open House on April 27. We chose the Open House week end as a good time to visit Hank, Jr., who is a sophomore in Course X, and at the same time see what the Institute looks like today. I must say that it was a wise choice as all the laboratories were open and most of them had special exhibits or demonstrations. We couldn't possibly look at one tenth of all the things that were beckoning for attention. The number and variety of the athletic events that went on during that Saturday were surprising. There were intercollegiate sailing races on the Charles, baseball, lacrosse, track, tennis, crew and rugby. We saw a little of most of these events and enjoyed it all very much, so you see we really were very busy. I heartily recommend the annual Open House to all the old grads.

"I was very fortunate to meet our beloved Doc Lewis in one of the corridors near his office. He was showing his daughter and two little granddaughters around the Chemical Engineering Department. He is remarkable. He looks just the same and seems just as vigorous as he was back in 1920. It scarcely seems possible that that was 37 years ago. How the years have flown.

"Best regards to you and the members of 1920. I hope to see you and many of them at our 40th reunion in 1960, unless

my daughter's graduation from Skidmore College prevents me from being with you at the reunion." — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

We hope that our annual Class party on campus in Cambridge last month is now a fond memory to you, dear reader, and glows as brightly in retrospect as it appears from the early date on which these thoughts are set to copy paper. You have the advantage of knowing what a good time was had by all, whereas at this point in time we can only conjecture, based on the strong certainties of the past, that the events of Alumni Day will turn out to be as highly enjoyable as they always have been. The Review's publication schedule provides for a full description of the festivities in these columns come November and the appearance of the first issue of the ensuing volume. As you patiently await the printed details, please make certain that you have currently contributed to the annual Amity Fund, which is now open for the new fiscal year and urgently appealing to your accustomed generosity. By this means, and only thus, are you assured of an unbroken subscription to *The Review* when the fall months roll around and we gather here once more.

All acclaim for the kindness, courtesy, and teamwork of Louis H. G. Bouscaren'04 of Chicago and our revered former boss and one time top executive of *The Tech*, the universally popular executive vice-president, Harold E. Lobdell'17 of the Alumni Association, for completing a double assist to provide an absorbing account of a day in the life of a railroad president. From Gus to Lobby to us comes the front page of the *Pittsburgh Press* for Sunday, April 7, emblazoned with five-column banner top headlines and photographs screaming: "Slide Detours Traffic; Workmen Battle Mud," followed by, "Main Line Tracks of Pittsburgh and Lake Erie Blocked by Debris," and, "Buses Shuttle Passengers Around Slide." Immediately below, here in part, there is another blazing head, shouting: "Cab Driver Turns Up His Nose at Mud-Spattered P. & L. E. Chief," with this sub-deck: "Line Prexy Really Working on Railroad," and a photo of a woeful, bedraggled, familiar figure, captioned "John W. Barringer — Spattered with Honest Dirt." The main story, under reference to "terra infirma," recounts the feverish pace of workmen to clear a giant landslide of mud, shale, torn trees, and debris which rolled onto a main highway, two main rail routes, and business establishments, disrupting major traffic arteries. The associated story we reprint in part: "A cab driver took one look at John W. Barringer's mud-soiled clothes yesterday and balked at giving him a lift from the Pittsburgh and Lake Erie station. He called a railroad policeman to take the tattered looking 'fare' off his hands. The policeman advised the cab driver: 'I think you'd better take this man where he wants to go. He's the president of the railroad.'"

Lobby is the pivot man for another

double play which originated with a brilliant catch by Clarence M. Cornish²⁴, President of the M.I.T. Club of Mexico City, of an extensive article in a local newspaper on the subject of "*el doctor Manuel Sandoval Vallarta, subsecretario de Educaci3n y delegado de M3xico al Comit3 Interamericano de Rayos C3smicos en La Paz, Bolivia.*" In our halting adult education school Spanish, we have managed to decipher the sentence which says that Val was honored during his stay in the Bolivian capital by being designated an honorary professor of the *Universidad Mayor de San Andr3s*, which is co-operating with M.I.T. and other scientific bodies in maintaining a high altitude laboratory at a 17,000-foot level at Chocotaya. During the long summer pause in these 1921 columns, we will endeavor to unearth details of Val's important work as revealed in the article. For the benefit of classmates who will gather at our special 1921 reunion in Havana, Cuba, next February, we quote Lobby's accompanying words of wisdom in a personal note: "Both Cornish and I recommend that, in connection with your impending visit to La Habana to attend the Class of 1921 Reunion there, that you return via Mexico City to get 'readjusted' before reaching the land of snow and ice — and mosquitos."

We are entranced by a letter from the Reverend Williston Wirt of 4236 Likini Street, Honolulu 18, Hawaii. Writing on the stationery of the Pearl Harbor Memorial Community Church under a May 6 date, Will says: "I was delegated to write you concerning a small 1921 M.I.T. reunion which took place last Friday at the Oahu Country Club. Phil Coffin, of the Pittsburgh headquarters of the Aluminum Company of America, decided to forego his annual trip to Florida and seek the sunshine of the Islands. This alerted Harry Field, major-domo of the Hawaiian Electric Company, two other members of our Class — Bert Kingman and your humble servant. It was a case of both fair weather and good fellows getting together and, as the wives most kindly forgathered in a separate huddle, we were able to reminisce in comfort, style, and the aroma of fresh pineapple ambrosia.

"Of course, I was queried as to the reason for deserting ohms, amperes, and watts for Human Engineering, and tried to make clear the validity of my shift by indicating my present enterprise — the raising of a living memorial to the 'Day of Infamy' which will bring into being the beating of swords into plow-shares. The Congregational Churches have accepted the challenge offered by the Navy to erect a Community Church on three acres of Government property in the very heart of the military housing. Thus we will serve a constantly moving congregation of some 2,000 families who are sent here for two-year tours of duty. We are planning to have a huge stained glass memorial window in the entire front of the church, to be a center of pilgrimage for all of the tourists who wend their way up to Pearl Harbor. Donations for this memorial will be solicited from veterans and service families all over the U.S.A. If the Cac Clarke family decides to seek sunshine and sea breezes, why not head for the

Paradise of the Pacific, where we of 1921 will find another excuse to go on a technological toot!" Enclosed is the program of the May 5 services, containing an architect's sketch of the beautiful edifice which will rise adjacent to the U.S. Naval Housing at "C" Avenue and Second Street under Will's capable administration. Many thanks, fellows, for news of your gathering.

Robert F. Miller of Falls Church, Va., our Class photo-historian, sent a huge box full of color slides which he took of everyone who attended our 35th reunion at the Sheldon House, Pine Orchard, Conn., last year. This swells our large slide and movie files but we can always use any transparencies, pictures, or movie film which you may wish to contribute to the Class library. Says Bob: "I had hoped to be present this coming Alumni Day and show these slides in person. At the moment, it doesn't look very promising as my oldest daughter, Peggy, will be getting married on Saturday, June 15. And the previous week end, my fourth daughter, Kathleen, will be graduating from grammar school. I expect to be in the New York area for the next couple of months, representing our office of research and engineering in the important Post Office Department survey of the metropolitan area. I will be home each week end, but during the week I can be reached in Room 3517, General Post Office Building, New York 1, N.Y." Many thanks for your usual fine work, Bob. You'll be missed at Alumni Day. Our best wishes to you and Helen and the family.

Eliot Underhill writes a most welcome letter from his home at 100 Clifton Avenue, Los Gatos, Calif. Eliot says his copy of *The Review* just arrived and he turned first to the 1921 notes, about which he makes some most appreciated remarks. Since the notes can be only as good as the news we receive, Eliot is to be complimented along with the many others who make our task so much easier and more pleasant by writing to us every once in awhile. Eliot continues, in part: "I'm still only half alive with asthma. My older boy, Rick, is now at boarding school — the Midland School, an offshoot of Kent back East. This is the first year he has been away and, needless to say, I miss him, as we have been very close pals since he was a baby. My younger son, Mike, is still going to the local school. He would make a good engineer if he ever makes the entrance requirements. When I'm not busy keeping house for Mike, I've amused myself revamping various pieces of surplus radio gear and listening to records or FM. It's an old hobby of mine and keeps me from going nuts for lack of mental stimulation. I haven't seen any of the old bunch. If you or any of the others ever get out this way again, I hope you'll drop in. We had a good time some years ago in San Francisco." Thanks, Eliot. We did have a grand time at the Engineers Club and at the Top of the Mark, with a gorgeous sunset over the Golden Gate. Anyone in the neighborhood, especially wandering Phi Sigma Kappas, should drop in to see Eliot.

The recently published Dean's List for the first half of this academic year reveals that the three members of the Second

Generation Club of 1921 at M.I.T., who were graduated in this year's senior class, are all listed as honor students. They are Peter C. Card, son of Tom and Mrs. Card of Fairhaven, Mass.; Malcolm M. Jones, son of Mrs. S. Murray Jones of Waban, Mass., and the late S. Murray Jones; Thomas L. Whitehouse, son of Irving Whitehouse²² and Mrs. (Helen Lord) Whitehouse²¹ of Cleveland, Ohio. Congratulations! The Junior League of the Class continues to add to the rolls of the Baby Beaver Band. Writes Dug Jackson: "Our latest grandchild arrived April 9. This is our eighth grandchild and sixth grandson. He is Andrew Carlton Seabury, son of John and Elisabeth. Betty flew down to their home in Mt. Dora, Fla. On her return we will drive to Schenectady for the wedding of my youngest niece, the second daughter of my sister and Philip Alger¹⁵." Dug says he is planning to be in Havana next February and we hope the entire Hexalpha group will do likewise. We acknowledge with sincere appreciation a delightful letter from Mrs. Dugald C. Jackson, Sr., expressing her thanks to the many in the Class who wrote to her on her 80th birthday. We are glad to know that she has recovered from her illness and take this opportunity to express her good wishes to the Class. Mrs. Jackson says, in part: "I was touched in reading *The Review* to find that you were mentioning my approaching birthday. I have been unable to write to all the students of long ago, to my great regret. Perhaps I may be allowed to contribute my thanks through *The Review*. I shall be most grateful." Members of Courses VI and VI-A and all former students of the late Professor Jackson are invited to send a contribution for the Dugald Caleb Jackson Professorship, addressed to Mr. W. A. Hokanson, Bursar, M.I.T., Cambridge 39, Mass., with a note indicating its purpose.

Arthur E. Raymond, Vice-president of Douglas Aircraft, has retired from his post on the National Advisory Committee for Aeronautics. Arthur R. Gatewood, formerly chief engineer surveyor of the American Bureau of Shipping, New York City, was named vice-president for engineering at the organization's annual meeting, according to a clipping from the *New York Times*, which Harold Bugbee, keen-eyed Secretary of the fine Class of 1920, kindly forwarded to us. Robert S. Cook writes that he is making his annual trek north from Ft. Lauderdale, Fla., to his home in Canandaigua, N.Y. James L. Entwistle, electrical specialties manufacturer of Pawtucket, R.I., says he has moved his home from Esmond, R.I., to 3 Applegate Road, Cranston, R.I. New addresses have been received for Eugene S. Clark, Clifton B. Morse, Sherman E. Nichols, and William J. Regan and are available on request to your Secretary.

David O. Woodbury is represented in the *May Reader's Digest* by two interesting articles. He originally wrote "Gem Man at Trap Corner" for *Down East*, the magazine of Maine. The article on "Wonderland on the Edge of Absolute Zero," including the invention of the helium cryostat by Dr. Samuel C. Collins at M.I.T., had appeared in *Chemistry*, published by Science Service. Keep us posted on the space satellite book, Dave. Just before he

and Helen left for a trip to Europe and Scandinavia, our Class President, Ray St. Laurent, phoned last-minute details of the June 10 Class meeting and said he had attended his first meeting of the Alumni Council as a newly-elected member of the Executive Committee. J. Rowland Hotchkin, President of the Palnut Company of Mountainside, N.J., was recently elected a director of United-Carr Fastener Company.

Francis J. Magee has been appointed assistant chief engineer for construction and design of the Massachusetts State Public Works Department. A veteran of both World Wars, he advanced from buck private to colonel on General MacArthur's general staff in charge of research and development. He holds the Legion of Merit decoration. He was graduated from West Point and was associated with us in Course I. Except for war service, he has been with the State Public Works Department since 1927 and has been engaged in major construction work, including Route 128, the Fall River and Southeast Expressways, Worcester Turnpike, Lowell, Middleboro and Mattapoisett bypass, and other large projects. Major General John R. Hardin retired after 38 years in the Army, mostly on flood control and navigation work on the Mississippi River. President of the Mississippi River Commission, he had recently been Vicksburg Division Engineer of the Corps of Engineers. A former district engineer at New Orleans and for the Great Lakes area, he had also been chief of the rivers and harbors section in the Office of the Chief of Engineers, Washington, and assistant chief of engineers for military construction. He was graduated from West Point and with us in Course I. In World War II, he was deputy chief engineer in Europe. He holds the Distinguished Service Medal.

Antonio H. Rodríguez had a major part in the tremendous success of the first "M.I.T. Weekend in Havana" last February, which was also attended by Bill and Mrs. Sherry of Tulsa, Okla., and Ed and Mrs. Mandell of Miami, Fla. In reporting on what took place and anticipating the needs of the 1921 reunion in Havana next February, Helier has written a lengthy letter to Ray St. Laurent, from which the following are excerpts: "Of course, you are anxious to know the outcome of this year's 'M.I.T. Weekend in Havana' and my personal experiences. I was satisfied and very pleased. Some of the visiting Alumni came ahead of time, so I gave a buffet dinner at my home. The scheduled events started with registration at Hotel Nacional, then a tour of old and new Havana which ended at the Havana Club bar. Then we drove to the gardens of the Tropical Brewery, where we had luncheon, beer, music, made-in-Cuba steins with M.I.T. initials for the Alumni visitors and M.I.T. ashtrays for the ladies. Dinner at the Havana Yacht Club was attended by 101 people. There was entertainment, a few short speeches, and dancing. Monday, we went to Varadero Beach, 100 miles from Havana, where everyone went swimming. We had cocktails and a good lunch. This was the last official event. There was opportunity for the group to break up in smaller parties to visit places of their own choosing. All

those who attended expressed themselves as being very pleased and said they had a good time.

"The sincere co-operation of the officers, past-presidents, and members of the M.I.T. Club of Cuba was a most important factor. An important detail contributing to the success of the affair was the assignment of a resident Alumnus and his wife to take charge of two visiting couples from the time they arrived at the airport. If the resident was unable to take care of his visitors at any particular time, he had to find another resident to assume the responsibility. It worked out well. Graciela and I are glad to know you are planning a trip to Europe and would have loved to go with you. We are thinking of taking the same tour in the fall, before or after the Educational Council meeting at M.I.T." With this sort of help, our trip to Havana promises to be a really unusual event. For more information, write to Assistant Secretary Ted Steffian, Chairman of the Havana Reunion Committee, at the address listed below.

It is with heavy heart that we record the passing of Ray Rundlett, President of the outstanding Class of 1922, and Larry Coddington '22, a neighbor and long-time friend and associate in the founding of the M.I.T. Club of Northern New Jersey, both on the eve of a 35th reunion. On behalf of their legion of friends in 1921, we express to their families and to the members of the Class of 1922 our great sorrow.

To the families of two members of our own Class, we extend the sincere sympathy of the entire Class on the great losses which we share with them. Robert J. Hole, Vice-president and General Superintendent of the Cleveland Construction Company, died on April 13. A trustee of Wooster College, from which he was graduated in 1916, he became ill while at the college for a meeting of the trustees and the laying of a cornerstone for a new dormitory. Born in Salem, Ohio, he had been connected with the construction company, formerly the Lundoff-Bicknell Company, since 1921. In 1935, he also served as deputy administrator for the Ohio Recovery Administration. He had served in the U.S. Coast and Geodetic Survey and attended Case Institute. He was associated with us in Course XV. In World War I, he was a first lieutenant, Coast Artillery Corps, the orientation officer of the 51st Field Artillery, A.E.F., and served in the St. Mihiel and Meuse-Argonne offensives. He is survived by his wife, Mrs. Eleanor Fritchman Hole; a daughter, Mrs. Nancy Schlaak; and three brothers.

Charles MacKinnon, First Vice-president of the Plymouth Cordage Company, Plymouth, Mass., died in Boston on May 7. Born in Boston on June 17, 1899, he prepared for M.I.T. at Boston English High School. At the Institute, he was a member of the English High Club and the Mechanical Engineering Society. During World War I, he was a private in the S.A.T.C. at Technology. He was graduated with us in Course II and obtained his master's degree at Technology in 1923. He was an instructor at Case Institute for a year before joining Plymouth Cordage in 1924. He had been superintendent and manufacturing manager before his elec-

tion as first vice-president and director in 1941. He was also vice-president and director of the Plymouth Cordage Company Limited of Canada. His membership included the Plymouth Lodge of Masons, the Algonquin Club of Boston, Appalachian Mountain Club, Rotary, and the Newcomen Society. He was a corporator of the Plymouth Five Cents Savings Bank and a former member of the Plymouth Planning Board. He is survived by his wife, Pauline; a daughter, Ellen Anne, a student at Mt. Holyoke; his father, John C. MacKinnon of Milton; a brother, Dr. Elmer MacKinnon of Milton; and a sister, Mrs. Raymond Tufts, also of Milton. Mac was a loyal supporter of Technology and Class activities and a regular attendee at all of our meetings. He will be sorely missed by his many Institute and English High friends. We are indebted to Yard Chittick, Secretary of the Class of 1922, for advising of Mac's death.

We close this series of notes with the hope that you will join us here again in the fall. Best wishes to you and yours from all of your Class officers and committee chairman for a most pleasant summer. — CAROLE A. CLARKE, *Secretary*, Federal Telephone and Radio Company, 100 Kingsland Road, Clifton, N.J. EDWIN T. STEFFIAN, *Assistant Secretary*, 11 Beacon Street, Boston 8, Mass.

1922

The Class of 1922 suffered a grievous blow in the death of our Class President, Raymond C. Rundlett, May 4, 1957, in Bronxville, N.Y. Ray, whose home was at 6 Vine Street, died suddenly of a heart attack while dining in a local restaurant with Mrs. Rundlett. He had suffered a previous attack in 1956 but just prior to his death had been given a clean bill of health by the doctors, so the end came very unexpectedly. Ray, who had been with Curtis Publishing Company for many years, was Eastern regional sales manager of the *Ladies' Home Journal*. He was a Navy veteran of World War I, was formerly commander of the American Legion Post in Bronxville, and had been a Bronxville Village trustee and police commissioner in past years. He was also a former vestryman of Christ Protestant Episcopal Church. He belonged to the University Club of New York and the St. Andrews Golf Club at Hastings-on-Hudson, and was also a past-president of the M.I.T. Club of New York. Funeral services were held Tuesday morning, May 7, at Christ Church, and it was clear from the attendance that Ray was held in the highest regard by his friends and neighbors. Many members of the Class of 1922 were present, some coming long distances to pay their last respects. Ray is survived by his widow, Eunice Wade Hodgman Rundlett, and a son, Donald E. Rundlett.

Just a few days before Ray Rundlett's passing, word was received of the death of Laurence W. Coddington of 79 Oxford Street, Glen Ridge, N.J., on April 30. Larry, who like Ray had been planning to attend the 35th Reunion, was an electrical engineer with Ebasco Services, Inc., of New York, with which company he had been since 1946. After graduating from the Institute, he went to work for Public

Service Electric and Gas Company in Newark, simultaneously attending Newark Law School, from which he graduated, although he never formally practiced law. During World War II he was with the Federal Telephone and Radio Corporation, after which he worked for Aluminum Company of America in Pittsburgh prior to joining Ebasco. Larry is survived by his wife, Marie L. Wolfs Coddling, and two sons, Lieutenant Laurence W. Coddling, Jr., of the Marine Corps and Anthony S. Coddling, a student at Wesleyan University.

As these notes are being written prior to our reunion, no report on that affair can be given as yet; but in view of the more than 100 classmates who have already signed up, it is obvious that the Reunion will be a success, and your Secretary feels that he can safely state in anticipation that the Reunion was all that we anticipated that it would be.

Joseph H. Keenan, Professor of Mechanical Engineering at the Institute, gave a special series of four lectures in mechanical engineering at the University of London last February. Lecture I was on Heat and Thermodynamics Since Galileo; Lecture II, The Properties of Steam, An International Project; Lecture III, Equilibrium and the Gibbs Equation; and Lecture IV, The Thermodynamics of Coupled Irreversible Flows.

In early May, Massachusetts was beset with forest fires. Jimmy Duane has a house which was right in the path of the flames, but fortunately for Jimmy the fire, upon reaching his house, jumped right over the top to the woods on the other side. Jim, with water pump in hand, appeared in a picture in the Boston *Herald* begrimed but undefeated by the conflagration. — C. YARDLEY CHITTICK, Secretary, 41 Tremont Street, Boston, Mass. WHITWORTH FERGUSON, Assistant Secretary, 333 Ellicott Street, Buffalo, N.Y.

1923

William Webster, XIII, President of the newly-formed Yankee Atomic Electric Company, discussed "Atomic Power and New England" at the 54th Annual Meeting of the Worcester (Mass.) Economic Club, Monday, April 15. In addition to his other responsibilities. Bill is president of the Narragansett Electric Company in Rhode Island and executive vice-president of the New England Electric System. He is a fellow of the American Academy of Arts and Sciences, and a former member of the Army Scientific Advisory Panel and the National Advisory Committee for Aeronautics. In addition to being a graduate of the Institute, he also graduated from the U.S. Naval Academy.

We regret to report the passing of Franklin Marion Gentry, 2d, XIV, while vacationing in Hamilton, Bermuda. He had been an executive with Lord Abbett and Company of New York City, an investment banking firm, until he retired in 1954 because of ill health. He had been in the investment field since 1930 — was a vice-president of the Manhattan Foundation and an executive of Fenner and Beane Corporation. He was assistant to the consulting engineer of the New York Edison Company and was active in steam

power plant design. He wrote and was an authority on *The Technology of Low Temperature Carbonization*. He was a member of the Sons of the American Revolution, Society of Colonial Wars, and Colonial Order of the Acorn. He is survived by his wife, Violet, and a daughter. To both of them we extend the sympathy of the Class.

We also report the passing, on April 27, of Frederick E. Entwistle, X, a Du Pont Company executive, who had been recovering from a heart attack suffered a month earlier. He was assistant manager of the Planning Division of Du Pont's Fibers Department. Born in Lancashire, England, he taught at the University of Richmond, Va., from 1924 to 1928, then joined Du Pont and subsequently worked at the Company's plants in Buffalo, N.Y., Waynesboro, Pa., and Buenos Aires. He is survived by his widow, Blanche, his mother, a son, a daughter, and two sisters. To them we extend the sympathy of the Class. News has just reached us of the passing of Clinton H. Havill, XVI, of South Orange, N.J., and Lloyd M. Long, VI, of Dallas, Texas. No other information is available.

By naming a destroyer after him, the Navy honored Rear Admiral Henry Mullinnix who was killed on November 24, 1943, in the battle of the Gilbert Islands. His widow, Mrs. Mullinnix, of Stockton, Calif., sponsored the ceremonies at the Bethlehem Steel Company shipbuilding yards at Quincy, Mass., on March 18. Admiral Mullinnix was serving aboard his flagship, the U.S.S. *Liscome Bay*, an escort aircraft carrier, when it was hit by a torpedo and sunk on the closing day of the three-day battle. He was a holder of the Legion of Merit and the Purple Heart.

Edward McSweeney, XV, in a paper printed in *Advanced Management*, holds out some hopes that automation is not going to displace the art of management. He claims that although man invents machines and the laws that govern them, he apparently cannot resist the temptation to act like his own creations. Ed claims the recent vogue for special conferences, seminars, and refresher courses fails to raise a manager's I.Q., and continues, "I have yet to meet a good manager after a conference who wasn't a good manager before the conference." As vice-president and treasurer of Perkins Goodwin Company, director of the American Hard Rubber Company, the McFadden Publications, the National Blank Book Company, Shenango China, Inc., and the Southland Paper Mills, Ed should know something of which he speaks. All of which reminds me, if I don't stop writing these notes and do a little work for the I.R.M. this morning, this organization will be looking for a new manager. Cheerio! — HOWARD F. RUSSELL, Secretary, Improved Risk Mutuals, 15 N. Broadway, White Plains, N.Y. WENTWORTH T. HOWLAND, Assistant Secretary, 1771 Washington Street, Auburndale 66, Mass.

1924

Alumni Day has come and gone. Can't fill you in on any details, since at the time of writing neither of these is true. However, we can detail a couple of other

get-togethers of moment. These occurred in May, one at the Faculty Club at M.I.T., the other in New York.

The Cambridge reunion was essentially a "business" meeting, the business being to get out a few last-minute letters to those who had not yet been heard from in this year's Alumni Fund. For the purpose Class Agent Frank Shaw gathered together Frank Barrett, Russ Ambach, George Knight, Fred Westman, and your secretary. Frankly, the business was over in short order, but somehow other affairs kept us here late into the evening. Ray Lehrer and Phil Cohen had been expected also, but they were off somewhere sailing the bounding main.

The New York meeting had more people, but certainly no more fun. This was a mid-May luncheon with some 14 in attendance: Roland Black, Bill Correale, Griff Crafts, George DiSomma (now fully retired and back from a long stay in Key West), Art Kemp, Sox Kinsey, Pret Littlefield, Mal MacNaught, Herb Morse, Nat Schooler, Pret Scott, Greg Shea, and Ed Winingier. There's one new name on that list; Herb "Tacker" Morse. Haven't seen Herb since the days when he was *Voo Doo's* top promoter. From this meeting Paul Cardinal, our New York vice-president, unearthed quite a bit of news, something of a novelty in the last Class notes of the season.

The Wilson Glass warehouse in New York burned down recently. That's Griff Craft's company. Paul Cardinal came to the rescue with a lot of glassware his company had been wondering what to do with. Maybe Paul considered it a duty, since Griff is his boss in one spot at least. They're chairman and vice-chairman, respectively, of a professional committee. Griff's wife, Betty, who has been on stage, TV, and radio for years, is back on the stage again. All we can tell you is "somewhere near Harrisburg."

Dateline, San Juan, Puerto Rico: "Plans for a \$40,000,000 sale of stock has been announced here by Ferre Industries, family-owned multimillion-dollar empire of far-flung inter-American industries. Luis Ferre, one of four brothers who own the firm, said the company plans to relinquish about 40 percent control of its holdings 'to provide more capital for expansion and strengthen our ties with the public.'" Latest addition to their long list of interests; a rubber plant to make tires for consumption in Puerto Rico. Annual sales volume of all products: \$100,000,000! A fragment of news about George Parker comes via Frank O'Neil. George is having a gathering of some 400 British businessmen in Paris late in June. The invited speaker: Professor Schell.

One of those who missed the New York lunch was Bill MacCallum. Bill, of course, is a Californian, but being fully aware of his extensive travelling Paul sent him an invitation anyhow. It turned out that, at the time, Bill was doing his travelling off the coast of Baja California. Another who couldn't make it was Harry Ferguson, vice-president and treasurer of Thiokol Chemicals. A recent item in the *Wall Street Journal* tells about the progress his company has made in the production of solid propellants for rockets. Three stages of Thiokol rockets have already

been used. "Five stages would project a four-pound vehicle into space itself, with the moon or Mars as its destination."

Sorry to have bad news to report once again. Charles F. Ramseyer, who headed his own company in New York, Ramseyer and Miller, died last December. No further information at the moment. Couple of years ago William F. Donovan came to Boston. None of us here had seen him and it was not until his obituary appeared in the papers that we knew what he was doing. Bill had been president of Thayer McNeil Shoe Company of Boston. As reported previously, he died on March 11 in Gloucester where he had been living.

Last January Robert Bosch Corporation announced that Foster N. Perry had been elected chairman of its board of directors. He had been with American Bosch since graduation, for the last five years as executive vice-president. A feature story in a local magazine, headed "Quarter Century of Progress in Queens," details Nat Schooler's very successful Flush-Metal Partition Corporation. "F-M products are looked upon as the Cadillac of the toilet partition business." However, Nat's partitions find uses elsewhere. Included among them, betting booths at both Aqueduct and Jamaica.

Bill Robinson forwards a report on Floyd Stewart who "has piloted the M.I.T. Club of Cleveland through a highly successful administration this year. I can say this wholeheartedly because he is an improvement over Yours Truly whom he succeeded." This we find hard to believe, but it's a becoming modesty. Bill ran the big M.I.T. Regional Conference out there in fine style. Max Ilfeld, believe it or not, has gone back to work. Evidently the leisure of retirement began to pall and even a merry round of travelling didn't seem to satisfy him. So now he is a supervising highway engineer for the U. S. Forest Service, working out of Albuquerque, N.M.

In April your secretary had an unexpected and all-too-brief reunion with George Y. Anderson, Jr., of Milwaukee while attending a play at Wheaton College. George, who is Bucyrus-Erie's vice-president for engineering, was on his way back from the middle of Africa where his company had sold a bit of heavy equipment. He stopped off to see his daughter who was in charge of make-up for the play. One of her victims: your secretary's daughter, who was a ghost! A good job of make-up from the professional standpoint, but much too realistic. In fact, a ghastly ghost.

There are, according to the record, almost 850 members of the Class of 1924. How many did you know? This business of assigning a man to a particular class is not simple. The majority of us went through four years of undergraduate experience together. These are the men we usually think of as classmates. From their ranks come those who return to reunions. But in addition there are those who started with us but, for varying reasons, didn't last long. There are those who were working for graduate degrees and got them in 1924. We didn't know them, but they are, on the record, classmates. There were Army and Navy men who were sent to M.I.T. for special work. Your secretary

remembers a squat, crew-cut, uncommunicative man named Doolittle in a math course. His name meant little then. There was another of these service men with whom some of you sat in class. If you remember his name it was probably because it was so peculiar. Certainly you never knew him on the Field Day tug-of-war team or *The Tech* staff or the Technique Electoral Committee. His name was Stump, and he was a Navy man.

In May the *Saturday Evening Post* had a feature story called "Man On A Hot Spot." It was about Admiral Felix B. Stump, U.S. Navy, "boss of the Pacific Command, which currently is the largest, most turbulent and important command in the world. Now in his sixty-third year, Admiral Stump runs all United States military interest — Army, Navy, Air Force, and Marines — over an area 35 times as large as the United States. He commands 500,000 men, about 4,000 military planes, and 500 Navy ships. They are stationed from the Americas to Pakistan, and from Alaska to the South Pole. He's an aviator — with a master's degree in aeronautical engineering from M.I.T. — a sailor and probably the most influential statesman in Southeast Asia." That's your classmate, Felix Budwell Stump of West Virginia, who, says the author of the article, is a "very, very solid man."

And thus endeth the ninth lesson. We'll pick up again come November. In the meantime, have fun this summer and send your secretary a stream of picture postcards from whatever near or remote corner of the world you happen to be in. Best to you all. — HENRY B. KANE, *Secretary*, Room 1-272, M.I.T., Cambridge 39, Mass.

1925

Many of the Class have made the newspapers in the past month or so, and your Secretary is well armed with news for this issue of *The Review*.

A note to Herb Taylor at his new address (Fort Myers, Fla.) brought an immediate reply. For the past couple of years he has been carrying on geologic exploration and diamond drilling along with consulting from an office in Chicago. One of his jobs took him into Florida, and he became involved in an economic survey of a six-county area, plus some evaluation work on some specific properties. He became intrigued with the area and possibilities, and entered into a partnership arrangement with one of the men for whom he was making the report. As a result, he has hung out his shingle as a consulting engineer in Fort Myers. His work involves quite a bit of travel around the state and allows him to get back to southern Illinois and Chicago occasionally. Among his activities, he is starting up a charcoal business using woods that have never before been commercially utilized, and he is helping to set up a sizable nursery to develop stands of fast-growing hardwoods. He is not passing up any mineral exploration which may come to his attention.

Herb points out that he has stopped twice in Birmingham, while travelling in Alabama, to call on Gordon and Isabel Creveling. As most of us know, Gordon is the general superintendent of coal mines

for the Tennessee Coal and Iron Division of the U. S. Steel Corporation.

Congratulations are in order for Dr. J. Fred Walker who has been presented the 1957 Jacob F. Schoellkopf Medal. This medal is awarded annually by the Western New York Section of the American Chemical Society, and the presentation took place on May 14, 1957, in the Sheraton Brock Hotel, Niagara Falls, Ontario. Fred has supervised research on formaldehyde, and sodium electroplating, vinyl products, and ceramics. The award is being given for many years of research on formaldehyde, a material on which the American Chemical Society considers Dr. Walker the world's leading authority.

It is an unusual pleasure to have news regarding one of the 1925 coeds. Mrs. Mary Morrison Kennedy, Vice-president of Decoration and Architecture for the Sheraton Corporation, received much favorable comment upon the opening early in March of the handsome Sheraton Hotel in Philadelphia. The Sheraton was designed by Perry Shaw, Hepburn and Dean of Boston, the firm credited with the restoration of Williamsburg, Va.; and Mrs. Kennedy represented the Hotel Corporation in preparation of the plans.

The Audio Engineering Society honored several Californians at a meeting in Los Angeles on February 5, 1957, and among those awarded fellowship certificates was Chester A. Boggs, II, Research and Development Engineer for the Hughes Aircraft Company for his long-time work in disk and film recording and for his contributions to the design of precision electro-mechanical devices.

A news clipping from the Winsted, Conn., *Citizen* notes that Lester C. Smith is on the Scholarship Committee of the Hartford Section of the American Society of Mechanical Engineers. This Committee has just announced that it will award a \$250 scholarship to a promising freshman from the Hartford area entering the University of Connecticut in the field of mechanical engineering.

Last month, we were sorry to report the death of Herbert A. Lafler but had no details at the time. He died on March 17, 1957, at his home in Madison, N.J. For 31 years Herb was with the New Jersey Bell Telephone Company holding positions in the plant and engineering departments, including those of district superintendent in Jersey City and Camden, and superintendent of the company's Northern New Jersey Division. In 1946, he was named general plant manager, and in 1954 he became head of the company's Engineering Department. He is survived by his widow and one daughter.

It is with regret that we announce the passing of Albert G. Malagodi. He died of a heart attack on April 20, 1957, at Boynton Beach, Fla. He was retired assistant United States attorney in Boston, and had moved to Florida about a year ago because of ill health. He is survived by his widow. — F. L. FOSTER, *Secretary*, Room 5-105, M.I.T., Cambridge, Mass.

1926

This being our last issue of Class notes before the summer holiday we will try to

include all of the return post card messages not previously published. It's fortunate because it actually takes longer to boil down these cards into the allotted space than to write notes longhand. The cards are none the less quite newsy and will bring you up to date on many classmates. Before listing the returns, however, let's report on some recent important happenings.

Ted Mangelsdorf has been elected as a vice-president of Texaco with whom he has been since 1933, having been general manager of refining since 1954. Ernie Warburton, Brigadier General in the U.S. Air Force, is now commander of the Air Force Operational Test Center at Eglin Air Force Base, Fla. Ernie entered the service upon graduation in '26 and has had a long and brilliant career in the Air Force with decorations galore. George West was recently named controller and manager of finances for Taco Heaters, Inc., of Cranston, R.I. Stark Draper has added a new important achievement to his already long list. It is called the Inertial Guidance Device, a gyroscope development that can lead an aircraft accurately to its destination without human or mechanical correction. Destination is any spot on earth and possibly beyond. Congratulations to these classmates for their new and important achievements.

Now let's get along to the cards. *Eben Haskell*: "Dear George: A few hasty lines to let you know I haven't lost interest in M.I.T. or '26. I have just completed the chairmanship of the local personal solicitation fund drive for the Alumni Association. Been just too tied up with family to make any June reunions — there has been a graduation of some sort for the past five years. Oldest girl from Mt. Holyoke, now at University of Arizona for graduate study; second girl from Smith last June, now married and in Japan; third girl a sophomore at Mt. Holyoke; fourth girl hoping to be accepted somewhere this June; and son entering Hopkins Grammar this fall. My wife and I are off to Europe for six weeks to celebrate our 25th wedding. See you some time. Eben." *William T. Dixon*: "Daughter, Ellen, a junior at Cornell studying fine arts. Son, Bill, Jr., a freshman at Cornell in chemical engineering. Old man manager of Design Engineering Department, Atlantic Refining Company, Philadelphia. I visited Tech when in Boston for an American Institute of Chemical Engineers meeting and was much impressed with changes. Bill."

Robert W. Rogers: "Dear George: Rosamond and I went to Tucson last fall to visit our daughter and get better acquainted with the three grandchildren. Stopped three days in Sante Fe, hired a car and drove all over including the Pueblos. Had a fascinating time of it, took lots of pictures, some of them pretty good. No see any '26 classmates, Bob." *George W. Breck*: "No major change with me since my last. Daughter, Caroline, is junior in Northwestern University majoring in speech. I ran into Dick Pough several months back. He is devoting a lot of time to the preservation of wildlife lands and refuges for the future, with all of which I am in close agreement. George." *R. Gordon Spear*: "Just returned from a month's vacation in which we took a 14-day West

Indies Cruise. Had a very fine trip, took lots of 35-millimeter color shots with my Contaflex. Spent another 10 days at Miami Beach soaking up more sun. Returned to work on April 1 to a new job as production manager of the Fisher Body Livonia Plant (rebuilt by Fisher on the site of the 1953 Detroit Transmission fire) making interior soft trim for B-P-O cars. Best regards, and keep the notes coming. Gordon." *Alfred W. French, Jr.*: "Dear George: Every year on December 26 our family heads for our cottage at Indian River, Mich., to ski at Otsego Ski Lodge with our 21-year-old Princeton senior, our 20-year-old daughter, and our 12-year-old son, Dan. Bob and Julie Brand '26 are members and it is always a pleasure to see them, their children, and grandchildren. Kindest regards, Al." *Winslow H. Russell*: "Having worked on '26 for so long, let's start building up our counterpart, 1962. I have the first candidate, a 16-year-old son who is now a junior at Mt. Hermon School. Best regards, Win." *Benjamin P. Richardson*: "Dear George: Unfortunately, our Reunion week end passed all too quickly. Have added farming to my hobbies. As it is in Vermont the cash crops will be milk and eggs. Am looking for provocative ideas in organic gardening. Has anybody any ideas for experiments in this direction? Best regards, Ben." *George P. Milmine*: "Ex '26, Lakeville, Conn. Assistant headmaster and admissions officer, Hotchkiss School. Trustee: Salisbury School, Southbury Training School. Chairman Board of Finance, Town of Salisbury. Married to Mary C. Parker (Lancaster, Mass.). Children: Katherine (Bryn Mawr '58), Charles E. (Exeter '57). George." *Earl C. McMahon*: "Recently promoted from chemical engineering to superintendent, Sewaren Generating Station, Public Service, Electric and Gas Company (N.J.). At an American Institute of Electrical Engineers meeting in New York recently and bumped into Bill Borghesani, first time in 30 years. Your interesting notes on Pigeon Cove make it sound very attractive. What do you sail there — Lightnings, Blue Jays, Thistle? Best regards, Earl."

Emerson W. Eddy: "I guess you saw that Jim Drain is vice-president of Mining and Construction Division of Joy Manufacturing. I see a lot of Alan Bassett, who is president of Grevatt Brothers (exporters). About all I can report is a detached retina occurring Sunday of our reunion and resulting in five weeks in the hospital last summer. The job was successful and I will go after the golf again just as soon as weather permits. Wick." *Roger R. Smith*: "Florence and I are living in a house she fixed over early this year in Jaffrey Center, N.H. Our daughter, Natalie, is married and lives in Natick. She has one son, Neil, our oldest son, expects to leave for Camp Carson in a few days for two years. David, the youngest, is in his third year at Holderness. He is very much interested in wood engraving. After summering in Jaffrey for 20 years, we find it a delightful place to spend the 12 months. With sincere regards, Roger." *Rene T. Brosens*: "Actually chairman of Société Financière de Transports et d'Entreprises Industrielles, Brussels, and Compania Argentina de Electricidad, Buenos

Aires. Three sons at M.I.T.: Peter, M.Sc. in mechanical engineering, engaged in research work at the Institute; John, fourth year in chemical engineering; Paul, second year in civil engineering. John and Paul are on the swimming team of their class. Rene."

James Q. duPont: "My work with the Public Relations Department of the Du Pont Company continues to take me to nearly every state in the U.S.A. If any classmate sees, in advance, publicity for my speeches in your vicinity, I'd be delighted if you'd look me up. I'll buy the drinks for old times sake in 1957. Regards, Jim." *Walter E. Lobo*: "I just came across this card while cleaning out my desk. I have been home recovering from a hernia operation brought back from a European business trip a few weeks ago. By the way, whom should I run into the day I was returning but Jay Goldberg at the Grosvenor House in London. Looks healthy and prosperous in his own consulting business. I am still director of the Chemical Engineering Division at the M. W. Kellogg Company; been there 20 years now. I read in your notes about all the young M.I.T. sons. My eldest, M.I.T. '50, Ph.D., Michigan, chemical engineering, January '55 I think it was, is with Continental Oil in Ponca City. I have four others. All in or finished college except the youngest. Ran out of room. Sincerely, Walter."

That seems to wind up the return cards, but if you sent one and it has not yet been included, please give me a blast. We have a new address for Bill Rivers, who is a much poorer correspondent since returning to the United States. The address came from the Alumni Office and is Janelia Farms, Ashburn, Va. Again we say, when you come to New England this summer, drop by Pigeon Cove. A classmate who recently paid a visit was Dan Bloomberg who was east on a business trip and was spending the week end with his family at Gloucester. Dan is still with Republic Pictures in Hollywood, now engineering vice-president and up to his ears in making movies for TV, including "Sergeant Friday." He lives a 15-minute drive from the studio, has a son and a daughter in school, and left us intrigued with the idea of visiting California. Don't forget to send us a post card from your summer vacation spot so we can report about your activities in the fall. Meanwhile, we will be trying to get some speed out of the Starboat *Flying Cloud* here at Pigeon Cove. Have a nice summer. — GEORGE WARREN SMITH, *Secretary*, E. I. du Pont de Nemours and Company, Elastomers Department, 140 Federal Street, Boston 10, Mass.

1927

A prominent member of our Class, Kenneth H. Hemenway of Northampton, Mass., died April 15 in Boston. He was a member of the law firm of Hemenway and Hemenway, with which the late Calvin Coolidge was identified before and after he was elected as president of the United States. After receiving a B.S. degree in business administration in 1927, Hemenway read law in his father's office for three years, and was admitted to the bar in

1930. He is survived by his widow, Jean M. Hemenway, and his mother. Mrs. Russell R. James has notified the Alumni Register of the death of her husband on March 23, 1957.

Directors of Tracerlab of Waltham, Mass., announced the election of Samuel S. Auchincloss as president and chairman of the board. He had most recently been president of the Cleveland Welding Division of American Machine and Foundry Company, and president of DeWalt, Inc., manufacturer of power cutting tools. After World War II he was decorated with the Distinguished Service Medal, the Silver Star, the Legion of Merit, and the Bronze Star.

Sidney Waugh, Sculptor, has designed the Commemorative Medal which will be given to members registering for the May convention of the American Institute of Architects. Waugh is well known for his work with the Steuben Glass Company. Jim Lyles has been elected a senior vice-president of the First Boston Corporation. New engineering appointments for CBS-AM-TV include that of Howard A. Chinn, formerly chief engineer, audio-video division, as chief engineer, CBS-TV. Chinn joined CBS in 1932 after graduating from M.I.T. He is a fellow in the Audio Engineering Society, a member of Institute of Radio Engineers, and the author of *Television Broadcasting*, a volume in the McGraw-Hill TV series.

Dr. Royal Weller has been appointed vice-president in charge of engineering for the Stromberg-Carlson Division of General Dynamics Corporation. He was chief scientist at the Naval Air Missile Test Center, Point Mugu, Calif. Fermo A. Bianchi of Carlo Bianchi and Company of Framingham, Mass., was elected president of the New England Road Builders' Association. Bianchi, a resident of Framingham, is president of the Framingham National Bank and treasurer of the Bianchi Company. — J. S. HARRIS, *Secretary*, Shell Oil Company, 50 West 50th Street, New York 20, N.Y.

1928

A picture of Allen Tarr appeared in the *Bulletin of the American Society for Testing Materials* for February. Allen's friendly gaze looked out at us from page 50 where he appeared as a co-author of an article on "New Method for Recording Explosion Impulse Effects on Solids." The caption read, "A. L. Tarr, Consulting Metallurgist, Engineer Research and Development Laboratories, U. S. Army. Has been a professional metallurgist since 1928. Is the author of several patents and technical papers on a wide range of subjects. Initiated the explosive impulse studies in connection with attempts to obtain criteria for the diagnosis of brittle failures of military equipment."

Herman Swartz, our Class agent, who is well known to all of us, now has his place of business in Lexington, Mass. Herm is publisher of *New England Construction* magazine, a periodical that he established in 1936. Until the move, the magazine headquarters were located in Boston. The change was made for operating convenience—easier access, better parking facilities, etc. While we are on

the subject, let us be reminded to give Herm, as Class agent, our full support. He is doing a fine job at a difficult but very necessary post.

George Chatfield has been elected a governor in the Eastern Region of the American Association of Advertising Agencies. George, who is executive vice-president of William Esty Company, Inc., New York, has been in advertising from the time he graduated in Course XV-2. George has served the Class faithfully as secretary for nearly 30 years, and, unquestionably, is one of our best-known classmates. The honor he has now received is a real tribute to his leadership in the advertising profession. Congratulations, George, from all of us! — RALPH T. JOPE, *President*, Room 3-232, M.I.T., Cambridge, Mass. WALTER J. SMITH, *Assistant Secretary*, 15 Acorn Park, Cambridge, Mass.

1930

Jim Bowen could not let my invitation to write pass without answering, and that's what I like to hear! For the past 11 years, Jim has applied himself to the real estate business in Phoenix, Ariz., with most of the time devoted to specialization in commercial and industrial properties. He says that with Phoenix one of the bright spots of the nation as far as growth and vitality is concerned, it has been a most interesting experience. He has amplified his activities by forming a new corporation with Charlie Crawford '31, the Bowen-Crawford Mortgage and Investment Company. Best of luck to you and your partner in this venture, Jim. By the way, he would enjoy having any classmates drop in and see him when they travel his way.

Jack Latham replied to our inquiry by telling us that the big news with his family is that his son, David, has been accepted for M.I.T. starting as a freshman this coming fall. Nichols, his first son, is a junior here at the Institute, and by the way his third son talks, one would say he has already made up his mind that he will be applying for admission in a few more years. Herman Scott sent us a note saying that his company, H. H. Scott, Inc., is building a new plant in Maynard, Mass. Congratulations! Our classmate, Dave Stanley, wrote from Evanston, Ill., to say that he is on the faculty at Northwestern University School of Business teaching transportation. He is married, has two daughters — one is at Northwestern University and the other at Stephens College, Columbia, Mo.

I know you will be sorry to hear the sad news that our classmate, Lester E. Keene, passed away on October 19, 1956. This information was relayed to us by our Alumni office.

The following address changes have been received: George M. Houston, 4404 Mockingbird Parkway, Dallas 5, Texas; Dr. Sebastian B. Littauer, The Technion, P. O. Box 4910 Haifa, Israel; Dr. Joseph R. Stevens, J. R. Stevens Chemical Company, Phillipsburg, N.J. — GEORGE P. WADSWORTH, *Secretary*, Room 2-287, Department of Mathematics, M.I.T., Cambridge 39, Mass. LOUISE HALL, *Assistant Secretary*, Box 6636 College Station, Dur-

ham, N.C. RALPH W. PETERS, *Assistant Secretary*, 249 Hollywood Avenue, Rochester 18, N.Y.

1931

An announcement in the Bridgeport, Conn., *Post* told that Charlie Bicking was the guest speaker at a monthly dinner meeting of the American Society for Quality Control. Charlie, who was formerly with the Chief of Ordnance, is now quality control manager in the Research and Development Division of the Carborundum Company in Niagara Falls.

A note from Dave Buchanan says, "Don't know that I have any really exciting news. We have finally gotten our place in Chappaqua fairly well finished, that is at first glance, though of course there is enough work there to spread over the next 10 or 20 years. I have also tried to return to my youth by recently taking over as Scoutmaster of Troop 2 at the First Congregational Church. I am not quite sure who is kidding who on that youth business but it's lots of fun anyway. On top of this and a few other activities, the hi-fi bug has bitten me, and spare moments at night find me in the basement with the soldering iron."

Brigadier General Bob Fleming, who has bossed the Army Engineers in New England for the past 26 months, has been reassigned to an overseas command. Many of you will recall that Bob directed the emergency work of the Engineers after the hurricanes that did so much damage to New England a year or so ago. His department has been the focal point for some \$150,000,000 in flood control construction which is now under way or in the planning stage. He is returning to Europe to take command of ADSEC, the advance section of the European communications zone, embracing all military depots and supply and transportation facilities from Rheims to Geissen.

An announcement in the Framingham *News* tells of the engagement of Miss Anne Elizabeth Ferrucci to Paul Bottazzi. Miss Ferrucci, who is the daughter of classmate Joseph Ferrucci, will be married in October.

Saw Leon Fraikin at a recent meeting of the New York Technology Club. After graduation, he left the United States to work in Europe, Asia, and South America, returning here in 1954 as president of the Franki Foundation Company. His address is 103 Park Avenue, New York, N.Y. At the same meeting, I also met Ivanhoe Denysen '32, who is now chief design engineer for Rayon Consultants, Inc. His company designs synthetic fibre plants for industrial customers all over the world.

It was a great shock to learn of Charlie Conwell's sudden death on April 2. He was tool and methods supervisor at the Hamilton Standard Division of United Aircraft at Bradley Field, Windsor Locks, Conn. Charlie was at the airport to see his wife and eight-year-old daughter, Erma, off to Florida. Holding his daughter in one arm and a suitcase in the other, he stumbled as he approached the plane and was caught by a ground crewman. Employed in the processing section of Hamilton Standard's Production Engineering Department, Charlie was the division's top

tennis player, unbeaten in singles competition in the Hartford industrial league for many years. He was born in Somerville, Mass., August 15, 1907, and went to Princeton University before attending M.I.T., from which he obtained a B.S. degree in economics and a B.S. degree in aeronautical engineering. Through the 1930's he worked for the E. G. Budd Manufacturing Company of Philadelphia, Pa., as assistant to the chief engineer. For a time he also headed the firm's Los Angeles, Calif., office. In January, 1941, he joined Hamilton Standard as a designer and was assigned to production engineering in 1948, becoming supervisor of special processes in 1954. He was elected to his present post in December, 1956.

The following changes in address have been called to our attention: Curtis B. Brown, Box No. 713, Boise, Idaho; Charles H. Durning, Panorama Heights, Longmont, Colo.; John R. Gardner, 62 Goode Street, Burnt Hills, N.Y.; Commander Walter M. Graesser, 333 East 53d Street, New York 22, N.Y.; Elmer C. Hughes, 313 E. Manchester Road, Syracuse 4, N.Y.; John L. Olsen, Jr., Winter Street, Medfield, Mass.; Donald E. Stearns, R. D., Erieville, N.Y. — EDWIN S. WORDEN, *Secretary*, 9 Murvon Court, Westport, Conn. GORDON A. SPEEDIE, *Assistant Secretary*, 90 Falmouth Road, Arlington 74, Mass.

1933

Get out your little black book and note June 14, 15, and 16 of 1958 for a trip to Cambridge with your wife. (If you don't have a wife, either [a.] get one in the next year, or [b.] come alone and help entertain the others.) Yes, preliminary plans are rapidly jelling for our 25th Reunion here on campus at the famous Baker House, the new dormitory that has caused much comment in architectural circles in the last few years and has been looked at closely by many other colleges for its unique qualities as a dormitory. Each of the last five classes celebrating their 25th have met on campus in Baker House and strongly recommend the whole idea. Most of these same classes had had stag reunions and admitted some reluctance to the idea of inviting wives. In each case, however, they report enthusiastic acceptance of a mixed reunion. In late April, a dozen representatives of our Class met in New York, and put the stamp of approval on the preliminary plans which Charlie Bell presented.

The response to Dick Fossett's letter, even at this early writing, has been almost phenomenal. Reference in many of the replies to news in the Class Notes has been most heartening to your Secretary. Let me report here on just a few of the interesting replies that have come in. J. Terry Smith reports from Aruba, Netherlands Antillies, that he is about to complete 20 years abroad with the Lago Oil and Transport Company. Terry has purchased a home in Jacksonville, Fla., which he uses on his periodic furloughs back to the United States. He proudly comments on his three boys and a girl ranging in ages from fifteen to three. Terry invites personal word from individual members of the Class. He may be addressed at

Esso, P.O. Box 329 in Aruba. George K. Withers reports from Atlanta, Ga., that he was forced to retire two years ago with 100 percent physical disability. The entire Class joins in sending best wishes to George. Mac Millard reports that he is now back in Cleveland for the third time with American Steel and Wire after spending the last two years in Pittsburgh with the parent company, U. S. Steel. Harry Summer reports from Chicago that he is still peddling childrens' wear for the Lerner Shops on a statistical engineering basis combining salesmanship and production. Harry explains this as "chain shipments." Harry reports that his wife grows more attractive daily. The Summers have two youngsters, eight and five, both doing well in school. Walt Duncan parted company with his gall bladder in April, but at this writing is hard at work running the largest cleaning business east of anywhere.

Doug Stewart reports from Whittier, Calif., that he is still president of the Olympic Metal Cutting Company, and at the present time is building a new home in Whittier. Congratulations to John E. Logan who recently became assistant vice-president of the New Jersey Power and Light Company and the Jersey City Power and Light with special responsibilities for engineering and production. John reports that his son, John, will enter Dickinson College, and his daughter, Judy, will enter Elmira next fall. Son Peter, age 12, won't be ready for college for a few years. This prompts a side remark that your Secretary will have three youngsters in college next fall. Nuff said. Gordon Pratt provides the thought for the month in reporting from Longmeadow, "Am interested in the plans for the Reunion in '58. Had such a good time at the 20th, I'd hate to miss it." News from you would be most welcome. — R. M. KIMBALL, *Secretary*, Room 3-234, M.I.T., Cambridge, Mass.

1934

Sam Groves has been made president of United-Carr Fastener Corporation, near neighbors of the East Campus Houses. Paul Wing, Jr., is now chief engineer of the Mason-Neilan division of Worthington Corporation. Jim Kimberly is president of International Cellucotton Products Company in Chicago and enjoys additional widespread fame as president of the Sports Car Club of America, numbering over 8,000 enthusiasts.

Bill Baker, naval architect extraordinary with the Fore River yard of Bethlehem Steel's Shipbuilding Division, is responsible for the design of the *Mayflower*, which is making her way across the Atlantic as this is written. A news story dated April 24 tells Bill's story well. It notes that after graduation from Course XIII, "He joined the Fore River shipyards at Quincy, Mass., and his career has been the ships and the sea — welding, designing, sailing.

"At San Francisco, Baker's reconstruction, in 1949, of famed explorer Ronald Amundsen's boat, the *Gjoa*, won him the St. Olaf medal. Because of his excellent work in designing ships, Baker was asked by a group in Plymouth, Mass., to draw

up plans for a second *Mayflower*. Later the program was dropped when it was learned that Project *Mayflower* of London had started a fund, supported by the people of England, to build a replica of the boat the pilgrims sailed into the New World. The British thought it would be a fine gesture to present the ship to the American people as a token of friendship for the aid Uncle Sam's nieces and nephews gave them during two world wars.

"Baker's designs for the *Mayflower II* were about five years in the making. He went to England, searched through marine museums for every picture, design, and world history of the *Mayflower*. He returned to the United States and began formulating the blueprints, finally emerging with the finished product. The pilgrim's *Shallop*, a 30-foot replica of the work boat carried aboard the original *Mayflower*, was also designed by Baker. That vessel was dedicated March 16.

"At last report, the sturdy *Mayflower II* was sailing toward America at four knots. Thirty-three are aboard and, they say, 'all's well.'" — WALTER MCKAY, *Secretary*, Room 33-213, M.I.T., Cambridge, Mass.

1936

It is encouraging to learn that someone reads the Class notes. Every once in awhile someone writes in and comments on something that has appeared recently. It is this kind of thing that makes all the effort put into it seem worth while. Justin Shapiro recently sent along the following: "When I read about Hoax Marvin Hewitt, thought I'd better write in and make a clean breast of it — only in my case, I've nothing to hide except a Course VII diploma. I've been up to the M.I.T. Chemistry Department a few times to sneak in a few research instruments which I designed for the American Instrument Company (1949 to 1956). When I read that Course VII graduates (biologists) were in the lowest income group, I switched to electrical medical equipment, qualified by having had a subpoena once for violating Ohm's law (Polytherm, Inc., 1936 to 1941).

"In 1941 I went to work for Mare Island Shipyard, where, as a draftsman, I received better wages than a biologist then received. In 1947 I got into nucleonics, then into instrument design at Aminco, and am now at Land-Air, Inc., designing jet engine vibration indicator systems and engine analyzers (see *Instrument Society of America's Journal*, March 1957.)

"I really need project engineers, so if you can give me a blurb and mention our openings for responsible men who can carry a project from conception through to a finished instrument, I shall be grateful. I need a man who is familiar with time signal distribution systems, or one who knows how to design miniature FM receivers, or one who is familiar with jet engine instrumentation. Wonder how many men from Course VII are still in the biological field? Do you have the statistics?"

Fellows, you can see how far we go to get material for these notes — free commercials. I have not been able to get the

statistics requested, but can think of no better method than to have each member of our Class who took Course VII write in and give us his story. For those who might be able to help Justin out, you can reach him by writing to Justin J. Shapiro, Chief Electrical Engineer, Instrument and Electronic Division, Land-Air, Inc., 2133 Adams Avenue, San Leandro, Calif.

Speaking of California, I got word through Eli Grossman's secretary that Eli had changed jobs and is to be located in the Golden State. Eli is our treasurer, so let's try to keep track of him. Eli, how about turning yourself in?

Fred Prah is vice-president in charge of research and development at Bradley Container. He has been with Bradley since 1953. Prior to that he had been executive assistant to the vice-president and director of research at United Shoe Machinery in Boston. Ledyard Blakeman has been retained as planning consultant to prepare a program for the Chamber of Commerce of Hartford, Conn. Ledyard was director of planning for the State of New Jersey for seven years and manager of the Metropolitan Planning Commission of Detroit for eight years. Ledyard is also secretary-treasurer of the American Institute of Planning.

Another national award has been presented to Professor Bob Woodward at the annual meeting of the American Chemical Society in Miami. He got the \$1,000 prize for his role in the synthesis of quinine, cortisone, lysergic acid, strychnine, and reserpine. Bob, as you know, is a professor of chemistry on the Harvard faculty.

Charlie Saffer is now assistant manager, National Northern, the technical division of National Fireworks Ordnance Corporation. His work is in the research and development of explosives and ordnance. Charlie is located at West Hanover, Mass. Dick Morton is associate professor of physics at Worcester Polytechnic Institute, Worcester, Mass. Dick married Frances Alcorn in 1941 and they have three children, ages 5, 11, and 13. Dick, I have not heard from you since our days in the Army together at Fort Wright. How about a long letter bringing us up to date? Victor Gilbertson is a partner in the architectural firm of Hills, Gilbertson and Hayes of Minneapolis. They specialize in industrial work mainly, and schools, churches, and hospitals. Hugh Knerr was a commander in the Navy, the last time we heard from him. He had been with the On Site Survey Board working out of the Navy's Inspector General's office. Later, he was transferred on loan from the Navy to the Panama Canal Company as chief of the Industrial Division. His address was Drawer NN, Cristobal, Canal Zone. His wife, Sally, informs us that he was selected for captain, U.S. Navy, so be careful how you address letters to him. (Three rousing cheers for the wives who send in news of their husband's doings — thanks, Sally.)

Charlie King's aunt informs us that he was in the Navy until 1945, then went back to school at Brooklyn Polytechnical. Charlie is now located in Chicago with Western Electric Company. Dick St. Clair is in the photographic consulting business. They do all kinds of things: designing, industrial dark-rooms, equipment, etc.

They also do photomicrography, medical, industrial, technical, etc. Dick reports, "Never a dull moment." The name of their firm is St. Clair and Price, 1101 Beacon Street, Brookline 46, Mass. H. S. Turner has been vice-president of research and development, Jones and Laughlin Steel Corporation, Pittsburgh, Pa., since October 1954. Harry Raddin is vice-president of Miller Hoff, Inc., Chemical Engineers. They specialize in bulk storage and feeding (metering), and improved utilization of waste by burning to produce steam recovery and/or converting to useful products. The Raddins have four children; 18, 16, 10, and 8 years old, and live at 2116 Staple Mill Road, Richmond 28, Va.

Harold George is production engineer for Kearfott Manufacturing Company, Electronic Navigation Systems and Engineering Consulting for Small Businesses. Harold lives at 380 N. Mountain Avenue, Upper Montclair, N.J., and is all wrapped up in operations research and its economic applications to manufacturing organizations. Don Thompson, of 14 Chestnut Drive, Woodstown, N.J., is with Du Pont. He heads up a laboratory division responsible for neoprene development. Last year he completed a book for the rubber industry entitled *Mechanical Molded Goods*. The Thompsons have two boys, 13 and 11, and a daughter, 10.

George Lewis left the public health field two years ago and moved back to 401 Walnut Street, Montoursville, Pa., from St. Petersburg, Fla. He reports that the summers were too rugged in Florida, and he missed the seasons. George is a registered representative with the firm of Penington Colket and Company and is enjoying a new home. After 10 years as public relations director, Pete Peterson was promoted to personnel employment and training work at the Beacon Research Laboratories of The Texas Company (Texaco). Pete lives in Fishkill, N.Y. Roger Krey was in the teaching field until 1951 when he left to set up a scientific automobile testing and tuning service in Montreal, Canada. In 1952 he married Barbara Crawford of London, England. They have two children. In 1955 he returned to engineering at the Advanced Development Group of R.C.A.'s Tube Division at Harrison, N.J. The Kreys make their home at 56 Passaic Avenue, Summit, N.J. Laxton Smith is a supervisor of process design for new plants by Du Pont in Wilmington, Del. One of his most important personal projects has been the design and construction of a modern ranch style home. He did most of the actual work himself; e.g., electrical wiring (pretty good for a chemical engineer) and, after living in it for two years, would not change any part of the plans.

Norman Bull is assistant sales manager, Technical Papers Division of Kimberly-Clark Corporation. He too is complaining of excessive travel, but finds the work interesting since they work on developments of "never-never" papers doing "impossible jobs" such as replacing textiles in clothing, etc.

The Bull family comprises wife, Dale, daughters, Audrey and Nancy, and son, Guy, living in Neenah, Wis. R. B. Woodcock is president of the John M. Glover

Agency, 268 West Avenue, S. Norwalk, Conn. — general insurance. He is also president (second term) of the Norwalk Community Y.M.C.A., member of Kiwanis Club (past director). Married in 1941, they have two children. Harry Kelly is assistant director for Scientific Personnel and Education, National Science Foundation. The Division of Scientific Personnel and Education encompasses the Fellowship, Education in the Sciences, and Scientific Manpower Programs of the Foundation. — JIM LEARY, Secretary, One Putnam Park, Greenwich, Conn.

1938

It's time to start thinking about our 20th reunion. By the time this is published many of you will already be aware that John Cook has accepted the chairmanship of the reunion. With this start I think we can look forward to a successful and enjoyable affair.

We have a card from Dick Bartels announcing the birth of a daughter, Dorothy Jane, on April 14. I wonder how many other members of the Class have added to their families recently? I'd be very happy to hear from them and to pass the word along. A note from Willard George, who took graduate work in meteorology, tells us that he is now "assistant minister and youth director at the Pleasant Grove United Presbyterian Church, of Youngstown, Ohio."

Charles Kittell, who is professor of physics at the University of California, Berkeley, has been awarded this year's \$1,000 Oliver Buckley solid-state physics prize for his applications of magnetic resonance methods to investigations of the electronic solids. The award, which is administered by the American Physical Society, was established by the Bell Telephone Laboratories in honor of one of its last presidents. — DAVID E. ACKER, Secretary, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge, Mass.

1940

Frank Yett is a mathematics teacher at Pasadena City College. Recently Frank obtained his Ph.D. at the University of California at Los Angeles. His thesis was on "The Determination of Structural Pattern in a Population of Comparable Governmental Demographic Units." Frank pointed out that the development of electronic computing machines enabled him to do in relatively short order the necessary calculations which would have taken more than 20 years by regular desk calculators. Dick Orth is vice-president and general manager of Westinghouse Corporation's Electronic Tube Division. Dick has been in the limelight recently in connection with the new split-grid focusing picture tube that has been developed at Westinghouse.

In addition to their professional activities, it is, of course, well known that Tech men play prominent parts in civic functions. The latest endeavor along this line is the appointment of Ed Kingsbury as general chairman of the Keene, N.H., Y.M.C.A. \$600,000 building fund campaign. Ed is past-president of the Keene Rotary Club, past-president of the Che-

shire County Chapter of the American Red Cross, past-president of the Keene Country Club, former president of the trustees of the Unitarian Church of Keene, and is present superintendent of the Church Sunday School. He is also active in the Keene Community Chest.

Dino Olivetti, who is president of the Olivetti Corporation of America, pointed out in an interview in Atlanta that the current political crisis in Italy may lead to the replacement of both the predominant Social Democratic and Communist parties, and that possibly they would be replaced by a combination of the Socialists and other parties. Claude Hawk retired from the Navy on February 1, 1957, and is now assistant chief engineer at the Harrison Radiator Division of General Motors Corporation, Lockport, N.Y. Apparently Claude is the first member of the Class to retire, but his retirement did not last very long in view of his new job.

Received a very unexpected and exotic looking letter the other day from Nassau. It was sent air mail and contained, besides a newsy letter from Charles W. Freeman, much interesting literature about the island. The best way is to quote most of the letter, as follows:

"I do not know whether you remember me or not, but I remember you very well indeed. I was M.I.T. Class of 1940 and I lived at the Deke House as a member. I was originally from Providence, R.I., but have lived in Nassau since early 1948. Since coming here in 1948, I have acquired 100 percent of the Royal Victoria Hotel here and also own the operating lease on Carlton House, another hotel here, although the two operations are separate. I also am interested in a number of other ventures here in the Bahamas and like the life here so much, that you could not drag me away with wild horses.

"I have seen a number of M.I.T. Alumni from time to time, although the only member of the Class of 1940 who has been down here recently to my knowledge is Bill Morrison from Lake Forest, Ill. He was here a little while ago with me. It was good to see him. I am a widower and have four wonderful children; three boys, aged fourteen, twelve, and two, and a little girl, aged six. The welcome mat is always out at the Royal Victoria for any of the members of our good Class. Quite frequently I am away on business trips, and it would be best if any one plans a trip to Nassau for them to drop me a note well in advance so that I will know they are coming and can try to roll out a red carpet or two. Just to tempt you to visit Nassau, I am going to enclose some 'propaganda' on our enchanted isles. It really is quite a lotus land."

This closes another volume of The Review. If any classmates are in Washington during the summer, your secretary will be most happy to see them. However, please phone before coming out, since I will be moving some time during the summer. — ALVIN GUTTAG, *Secretary*, Cushman, Darby and Cushman, American Security Building, Washington 5, D.C. SAMUEL A. GOLDBLITH, *Assistant Secretary*, Department of Food Technology, M.I.T., Cambridge 39, Mass. MARSHALL D. MCCUEN, *Assistant Secretary*, 4968 East 14th Street, Indianapolis, Ind.

1941

The "16th Reunion," if such it might be called, was held Friday, April 26, in the Faculty Club (the sixth floor of the Sloan Building, at 50 Memorial Drive in Cambridge). The party, ably presided over by Prexy Ed Marden and his bride of six weeks, began with a cocktail hour and social gathering, during which time assorted items of interest were unearthed, such as: Dot and Irv Stein are awaiting the arrival of their first offspring (due date about May 15); Sis and John Andersen and two of their children enjoyed a trip to Europe last winter; Barbara and Frank Johnson have two children, and, except for a stretch in the service, he has worked for Bethlehem Shipbuilding in Quincy since graduation, and is now materials engineer; Charlie Sauer is still single; Herb Klein is busy with the new high school building committee in Swampscott; Leona Norman Zarsky has three children; and Ed Beaupre has just bought himself a boat. After exchanging the above information, plus a lot more that I couldn't eavesdrop, we enjoyed a delicious meal (a choice of lobster or roast beef). Following this, Reid Weedon gave us a most interesting talk on Puerto Rico. Reid, now a vice-president of Arthur D. Little, Inc., has done a lot of work on Puerto Rican development, and had a very enlightening story to tell. He had, in addition, a colored movie of the island, which gave us all ideas about next winter's vacation. My chronicle of the evening must end at this point, for we had to leave for home in order to feed the new arrival. We all agreed it was an excellent affair, and we hope to do the same thing next year. If you're in the area, join us; if not, why not have your own affair? Present, almost all with wives (or husbands), were Everett Ackerson, John Andersen, Ed Beaupre, Frank Johnson, Herb Klein, Walt Kreske, Ed Marden, Paul Sanderson, Charlie Sauer, Irv Stein, Reid Weedon, Leona Zarsky, and the Secretary.

Along with encouraging returns of Class Dues have come several interesting letters, from which I am glad to quote. From Bill Hargens: "I'm sure we were all glad to get Ed's statistics on the Class even if we were not able to make the Reunion at Plymouth. We '41ers are in full force here in Philadelphia (Sam McCauley, President; Herb Moody, Secretary; and yours truly, Treasurer for the third year), so we keep in close touch. But we sure would like a register to tell us where all our other classmates are. Fine idea and good luck." From Pete Smolka: "I trust that in the future we will get more notice of scheduled events. With only two days' notice, I could not possibly hope to get away for the April 26 get-together. However, please give everyone there my best regards. [Sorry, Pete; we'll try to get the notices out earlier next year. — Sec.] As for news of the Smolka gang: I am scheduled to be transferred back to 'headquarters' in New Jersey this summer and accordingly expect to settle in the Summit, N.J., area next July or August — unless some unusual opportunity in the patent field should come up elsewhere in the meantime. On the whole I have been

pleased with my job at Esso, but sometimes wonder whether a smaller organization might not afford me a greater degree of 'autonomy.' (You may quote me.) Margie and our three girls are well, although our life has been quite subdued for the last few months due to the fact that Margie's gravely ill mother has made her home with us since early this year. P. S. Let me know if you hear of anyone looking for a five-bedroom house in Alexandria, Va. (Or aren't real estate transactions within the sphere of your multifarious activities?!") Sure they are, Pete; any takers? From Bill Burke: "Sorry I won't be able to join you at the get-together April 26, but Dedham is a long way from Dallas. Hope you have a very successful and enjoyable reunion. Please give my best to everyone there." And from Don Scarff: "From all the reports, the 15th Reunion must have been a fine affair. Again, I am sorry it was impossible to attend. Hope to say 'hello' before the 50th Reunion." A couple of professional cards arrived, too: Fred Came, Industrial Engineering Co-ordinator, Union Bag-Camp Paper Corporation, Savannah, Ga.; and A. Hoadley Mitchell, Mitchell and Gray, Ltd., Consulting Engineers and Geologists, Edmonton, Alberta.

A little more biographical information on our new brides has been provided by the clipping service. Natalie Marden attended Syracuse University, graduated from Boston University, and is on the faculty of the Pearce School in Newton. Ruth Chambers Thornton, of Bronxville, N.Y., and a graduate of Stephens College and the University of Wisconsin, also studied at the University of Grenoble (France), and until recently was on the Paris staff of the *New York Times*.

One of our coeds recently was honored, as reported in this release from the National Bureau of Standards: "Mrs. Edith Rovner Corliss, National Bureau of Standards physicist, has been awarded the Department of Commerce Silver Medal for Meritorious Service. The award recognizes her 'very valuable contributions to the science of audiometry and speech analysis and for meritorious authorship.' A member of the Sound Section, Mrs. Corliss is a specialist in speech communications systems, analysis of transients, and problems associated with the measurement of hearing. This is part of the Bureau's basic research, instrumentation, and standards programs in the field of acoustics. Mrs. Corliss first joined the N.B.S. staff in 1941, and the following year she transferred to the U. S. Weather Bureau. She also served as an astronomer at the U. S. Naval Observatory before rejoining the Bureau staff in 1944. Born in Cleveland, Ohio, Mrs. Corliss graduated from M.I.T. in 1941 with a degree of bachelor of science in physics. She has taken advanced work at Johns Hopkins, George Washington, Catholic, and American Universities. Mrs. Corliss is on several committees of the American Standards Association and is a member of the American Physical Society and the Acoustical Society of America. In addition to numerous publications, Mrs. Corliss is also the co-holder of a patent for monitoring and controlling the motion of a sound source." Congratulations, Edith.

Also deserving of recognition is Lloyd Perper, who has been on the systems engineering team on air traffic control as an aide to Presidential Advisor Curtis. The report of this group on its findings on the subject of air traffic safety, and on its recommendations for improvements in the present system of air traffic control, has recently been given wide publicity. And, to show that our talents are by no means limited to engineering and science, the following is quoted from the Gloucester, Mass., *Times*: "The adult choir will present choral vespers Sunday afternoon at the Rockport Congregational Church. Walter Lob will be the guest artist. There will be 22 voices, assisted by violinist Lob playing a Bach and Handel concerto. Mr. Lob received musical training in Germany, coming to this country at the time of the Hitler regime. He is an M.I.T. graduate and now teaches at Northeastern, living in Newton with his wife, the former Mrs. Fears of Pigeon Cove."

Davis R. Dewey, who received his doctorate in chemical engineering in 1941, has been elected president of Baird-Atomic, Inc., in Cambridge. Dr. Dewey had been vice-president of High-Voltage Engineering Corporation in Burlington, Mass., since 1951. Before that time, he was technical director of American Research and Development Corporation in Boston. During the war, he served as a lieutenant commander in the Navy Bureau of Ships, and was awarded a commendation from the Secretary of the Navy. Courtland D. Perkins, recipient of a master's degree in aeronautical engineering in 1941, was named chief Air Force scientist last April while serving as professor and chairman of the Department of Aeronautical Engineering at Princeton University. During the war, he headed the Stability and Control Unit of the Aircraft Laboratory at Wright Field. He has served as a member of the U. S. Air Force Scientific Advisory Board and the National Advisory Committee for Aeronautics' Aerodynamics Subcommittee, and has conducted research in the fields of airplane and missile stability, control, and guidance. Finally, an article in the *Detroit News*, complete with a picture of the family, tells of the activities of Warren Yee's wife, Ming Ting Yee. She is a doctor, specializing in radiology, at Wayne County General Hospital, while he is chief engineer for a large architectural firm. Their two children are Linda, seven, and Douglas, two.

This does it until November, men; let's hear from you during the summer so that we'll be able to start the news publication year with a lively column. And don't forget your dues!—IVOR W. COLLINS, *Secretary*, 28 Sherman Road, Wakefield, Mass. HENRY AVERY, *Assistant Secretary*, Pittsburgh Coke and Chemical Company, Grant Building, Pittsburgh 19, Pa.

1942

Of particular interest to chemical engineers is a masterful review of recent publications in fluid dynamics. Richard R. Hughes is coeditor of the 21-page section in *Industrial and Engineering Chemistry*. Dick came back to Tech after military service that included a tour of teaching

duty at West Point to take his M.S. and Sc.D. at the Institute. Since 1949 he has been with the Shell Development Company, Emeryville, Calif., where he has specialized in the application of fundamental fluid mechanics and mass and heat transfer to chemical engineering problems. Not too long ago Dick published two papers on his own work in *Chemical Engineering Progress*.

Professor Frank A. McClintock, of the Mechanical Engineering Department at Tech, recently spoke at a Mathematics Department seminar on "The Mechanics of Shear Fracture." The Institute publishes a weekly calendar of events that lists all seminars and colloquia. Class members who live in the Boston area or who visit Boston may well want to get in touch with their respective departments; the sessions are usually open to Alumni and are excellent media for keeping up to date in one's field. Cooper Milken, a registered architect in Old Town, Maine, made a cold spring journey to Bar Harbor to give a slide talk on contemporary architecture. After graduation Cooper worked with architectural and landscape firms in Bangor, San Francisco, and Seattle. He has designed many school buildings and won first prize in a national competition for his design of the Vine Street Elementary School in Bangor, Maine.

William C. Tallman spoke to the Manchester, N.H., Industrial Management Club on peaceful uses of nuclear energy. Bill is a research engineer for the Public Service Company of New Hampshire. Further news about Ronald Shainin is contained in an article in the staid *New York Times*. The caption reads, "Expert Plans to Catch Cobras by Bare Hands." The report quotes Ron's explanation that "capturing cobras was easier than capturing rattlesnakes. Cobras attack by slow downward strokes while rattlers use fast horizontal strokes." An expert of this persuasion is known as an ophiologist. Among Ron's customers for animals, eagles, and snakes are the Bronx Zoo, the Buffalo Zoo, the Miami Serpenterium, and the American Museum of Natural History.

On the domestic scene we talked with Gene Brady and learned that he has beaten the laws of statistics. Gene and Margaret Mary's three daughters, Dorothy, eight, Deborah, six, and Jeanne, four, were joined by John Joseph Brady this last April 6. Professionally, Gene is a department manager at the Polaroid Corporation in charge of manufacturing new cameras and other mechanical devices (flash guns, filter kits, copymakers, etc.). He keeps very busy as Steve Allen sells more and more of all of the elements of Land One-Minute Photography. An announcement from New York tells us that Lieutenant Commander Edward Ayres Boyd and Ann Biscoe Rixey were recently married in Fort Myer Chapel, Va. He did graduate work with us in meteorology. They are living in Monterey, Calif., where he attends naval graduate school.

The usual westward change of scene was taken by Captain John B. Oren, U. S. Coast Guard, who left New London for Long Beach, Calif. Joseph E. Welsh has moved up the Atlantic Coast from Brookline, Mass., to Portland, Maine. Dr. James H. Klein is now in Littleton, Colo.

On a note of sorrow we record the deaths of Andrew I. McKee, Jr., of New London, Conn., and Fairfield N. Stone of Bernardsville, Pa. We extend the condolences of the Class to their families and associates.

These notes close my five-year term as your secretary. It has been lots of fun putting together these periodic compilations of public recognition, technical achievement, personal notes, and intriguing travels. My many thanks to all who have sent in material about themselves, spouses, and friends; and my humble apologies for errors and to those not mentioned in these columns. May you one and all have many years of happiness and success.—LOU ROSENBLUM, *Secretary*, Photon, Inc., 58 Charles Street, Cambridge 41, Mass.

1943

An article which appeared in March in the *Denver, Colo., Post* brought us up to date on Charles C. Gates, Jr., vice-president of Gates Rubber Company, located in that city. Charlie's father founded the company in 1911, and it has grown to become the largest employer in Denver, sixth largest rubber company in the country, and the world's largest maker of V-belts. The company has 250,000,000 square feet of floor space, employs 5,500, and produces other things like hoses, tires, and mechanical rubber goods. Charlie, who joined the company in 1946, predicts that they will double in size in the next 10 years.

A card from Jacques R. Maroni from Dearborn, Mich., reads as follows: "After one year as staff assistant to the executive vice-president of the car and truck division, Ford Motor Company, I am now in charge of the marketing, planning, and analysis activities of the Mercury Division, which includes four departments; Sales Analysis, Sales Programming, Business Research, and Marketing Services." Robert R. Marshall of Dunellen, N.J., advises us that he is now employed as SAGE programmer for the Systems Development Division of Rand Corporation.

Your Secretary wishes you a happy summer, and don't forget to write.—RICHARD M. FEINGOLD, *Secretary*, 49 Pearl Street, Hartford 3, Conn.

1946

President Herb Hansell's letter arrived in the mail the other day containing a new questionnaire. I've already received a large number of them, but in case yours is sitting on your desk unused, please take a minute and fill it with all the news about yourself and send it to me. It will help keep this column going next year. With the returned questionnaire I've also received some kind comments on this column, for which I am very grateful. With Herb's letter was a copy of the spring issue of the *M.I.T. Newsletter*. I wonder how many others spotted an error in it concerning "on-campus reunions?" It stated that the Class of 1928 started something when it held the first "on-campus reunion" four years ago. We've always thought that the Class of '46 started that idea back in 1951!

We have received a couple of news clippings which bear reporting. Mort Bromfield, who lives at 8 Hubbard Street, Canton, Mass., was recently general chairman of the first Expo-Clinic held at the Commonwealth Armory in Boston. Mort is in business for himself as an engineering consultant in plant efficiency, materials handling, etc. Major J. Joseph Larkin, whose wife, Joan, lives at 919 Twentieth Street, Santa Monica, Calif., recently was graduated from the Anti-aircraft Artillery and Guided Missile Center at Fort Bliss, Texas. Major Larkin completed the school's 28-week staff officer course. Robert E. Meyer, who lives at 55 Williams Road, Lexington, Mass., was one of the principal speakers at a recent meeting of the Northeastern Section of the American Chemical Society held at M.I.T. His subject was "Patents in the Chemical Field." Bob is a patent attorney for W. R. Grace and Company, and its divisions, Dewey and Almy and the Cryovac Company. After receiving his M.S. from M.I.T. he earned his LL.B. from Northeastern University. He is a registered patent attorney, a member of the Massachusetts Bar, and Sigma Xi. Douglas Surgenor, who received his Ph.D. from M.I.T., is an assistant professor of biological chemistry at the Harvard Medical School. The Surgenors and their three children live at 25 Millbrook Road, Wayland, Mass. Doug is very active in his home town, assisting in the science program being taught at the high school, serving on the school committee, directing the Wayland Junior Town House, and serving on the Board of the Wayland United Nations Association. Dr. Ju Chin Chu, whose activities were more completely covered in the February issue of this column, has recently left the staff of the Polytechnic Institute of Brooklyn to become technical director of Chemical Construction Corporation. Dave Hoag, 426 Winthrop Street, Medway, Mass., sent me a card announcing the arrival of Jeffrey Taber Hoag, third child and second son, on March 31, 1957. Everyone's happy about it except Uncle Sam.

Ernest R. Kretzmer, who received his S.M. in 1946 and his Sc.D. in 1949, is now technical staff supervisor at Bell Telephone Laboratories at Murray Hill, N.J., working mainly on coding of television signals. Ernie is married, has one daughter, and lives at 35 Gales Drive, New Providence, N.J., and is active in the Summit, N.J., Community Chorus. He travelled to Europe in the fall of 1956 to present some papers in Frankfurt. Russell K. Dostal has been busy since he was married in 1949. The Dostals, who live at 1505 S. Bates, Birmingham, Mich., have five children: three girls and two boys. Russ is president of the Dostal Foundry and Machine Company of 2500 Williams Drive, Pontiac, Mich. Robert H. Lindberg is assistant manager of the Young Iron Works, a Seattle, Wash., firm manufacturing logging blocks, tools, and rigging. Bob lives at 9628 Hilltop Road, Bellevue, Wash. Paul D. Finefrock is president and general manager of the Roosevelt Material Company, dealing in crushed limestone aggregates. Paul lives at 113 North Hill, Hobart, Okla. Louis A. Payne has four children and lives at 1670 Torrence

Street, San Diego, Calif. He is a dynamics group engineer at Convair, San Diego, in charge of automatic control analysis. Kenneth N. Davis, Jr., has recently been promoted to controller of the newly formed Special Products Engineering Division of International Business Machines, located in New York City. The objective of the new division is to provide special data handling components and systems. Ken and his wife have two daughters and live at 35 Holland Place, Hartsdale, N.Y.

Seward J. Kennedy earned his LL.B. in 1951, and, after five years with the law firm of Davies, Hardy and Schenok in New York, is now in the New York office of the general counsel of the Mobil Overseas Oil Company, the overseas division of Socony Mobil Oil Company. He and Sue live at 78-11 35th Avenue, Jackson Heights, N.Y. George Bott, who lives at Warnock Drive, Route 7, Westport, Conn., is in operations research at the Central Research Laboratory of the American Machine and Foundry Company. Donald A. Herter, his child bride, Catherine, and their two daughters live at 40 Fisher Street, Norwood, Mass. Don, until recently, was assistant to the president of the Bradley Container Corporation in Maynard, Mass., but if memory serves me correctly (I talked with Don at the Mid-Winter Alumni Meeting), he is now quality control manager of Metals and Controls in Attleboro. If this is wrong, Don, please forgive it and correct it. After M.I.T., Don earned his M.S. in mechanical engineering at Yale in 1947, and since has been active in the M.I.T. Alumni Council as class representative and other class offices. For nightwork Don is restoring a 1912 "Mile-a-Minute" Hudson Raceboat. He says it is about two-thirds finished, and he hopes to have it ready for our 25th reunion. William H. Peirce earned his Ph.D. in mathematics from the University of Wisconsin in 1956 and is now assistant professor of mathematics at Michigan State University in East Lansing, Mich. Bill, Charlotte, and son, Don, live at 539 M.A.C. Avenue, East Lansing, Mich. Robert W. Gardner has been, in turn, an engineer at the U.S. Naval Air Rocket Test Station at Lake Denmark, Dover, N.J., with Allied Research Associates, Inc., of Boston, with the General Electric Small Aircraft Engine Department in Lynn, Mass., and for the last year has been doing mechanical engineering with the Cryogenic Process Design Group of Arthur D. Little, Inc., in Cambridge, Mass. Bob hangs his hat at 49 Garrison Road, Hingham, Mass.

Daniel D. Streeter, Jr., writes a postcard from 4744-4th Avenue, N.E., Seattle 5, Wash., to bring us up to date since his postgraduate studies at M.I.T. in 1951. From 1952-1954 he was with the U.S. Foreign Aid Program, M.I.T. teaching staff, at the University of Rangoon in Burma. From 1954 to 1955 he was an instructor in the Engineering Sciences Division of Purdue University, and since then has been in engineering research with the stress unit of Pilotless Aircraft Division of Boeing Airplane Company in Seattle. He expects that in two years the whole division will move to the San Francisco area, and he would like anyone in Seattle, or later on in San Francisco, to

look him up. John Gunnarson is plant manager of the M B Manufacturing Company, a division of Textron, Inc., in New Haven, Conn. M B makes vibration test equipment, employs 350 people, and has 90,000 square feet of plant. The Gunnarsons and son, David, live at 14 Old Hickory Lane, Branford, Conn. Weems E. Estelle has recently changed from chief engineer of McNab, Inc., to manager of engineering of Thomas A. Edison, Inc., supervising all engineering activity of the Voicewriter Division. He lives at 4 Pickwick Lane, Mountain Lakes, N.J. Bill Lindsay writes to say he is still production superintendent of the Excelsior Printing Company of North Adams, Mass. The Lindsays now have five children, and live at 3 Jamieson Heights, Williamstown, Mass.

Before closing for the year I'd like again to thank all those who have responded to our pleas for information about yourself. The flood of returning questionnaires has made this job not only relatively easy but very pleasant. I still have enough questionnaires left to make what I hope will be interesting reading for the first few issues next fall. Don't let that stop you from sending in news about yourself, though. It will be warmly received. One other comment. As you no doubt have noticed, I've tried to give the latest address of each person mentioned in these notes in the hope that such reporting would engender some mail or visits between out-of-touch friends. I should be very interested to know if the voluminous space involved in giving the addresses is serving any purpose. Your comments will be appreciated. Until next fall, then, have a pleasant summer. — JOHN A. MAYNARD, Secretary, 15 Cabot Street, Winchester, Mass.

1949

Those of you who noted *Time* magazine's recent feature, "Middle Africa, Cradle of Tomorrow," will be especially interested to learn that Yenwith Whitney and his wife, Muriel, have begun preparation for work as missionaries in the village of Libama, French Cameroons. The Whitneys have both received life appointments as lay missionaries for the Board of Foreign Missions of the Presbyterian Church, U.S.A. Their eventual first assignment will take them to Cameroon Christian College where Whit will teach science and Mrs. Whitney, a graduate of Hunter College, will work with the women students and teach Sunday School. In preparation they must spend two years studying in Paris learning to speak fluent French and the African "Basa" dialect. They will be going to Africa at a time when anti-white sentiment is rising and Negro missionaries are vitally needed.

Raymond Baddour, together with Margaret Hutchinson Rousseau, presented a paper, "Ripple Trays — A New Tool for Vapor Liquid Contacting," before a meeting of the American Institute of Chemical Engineers last December. Dr. Lawrence Bickford, Jr., has been appointed research physicist at the International Business Machines Research Center, Poughkeepsie, N.Y., where he is in charge of research concerning the origins

of magnetic phenomena. Lachlan Blair has resigned his position as chief of the Planning Division of the Rhode Island Development Council, and since January 1 has been heading up his own consultant firm, Blair Associates. Prior to his work on the development council he served as senior planner on the staff of the Providence (R.I.) City Planning Commission. His work has included selection of industrial sites, programming of major capital improvements, and other special economic studies.

Jane Blizard, formerly with the New England Institute for Medical Research, has joined the staff of the M. D. Anderson Cancer Hospital of the University of Texas in Houston. Dave Breed is currently studying at Harvard Business School. Previously Dave had been working for United Aircraft for five years. Phil Clayton and Sally Ann Wagner of Hagerstown, Md., were married last December. Phil received his M.S. in civil engineering from Johns Hopkins University and is now working as associate planner with the Baltimore (Md.) County Office of Planning. Ted deRoode and Nancy Fay Williams were married last December in Cambridge, Mass. Ted is associated with Hollingsworth and Vose Paper Company, East Walpole, Mass.

Robert G. Emerson has moved from resident planner for Manchester, N.H., to resident planner for Hanover, N.H. Bob recently joined the staff of Adams, Howard, and Greely, which is under contract for the Hanover planning effort. Guilford Forbes has been appointed production manager at the Meriden, Conn., plant of New Departure Division, General Motors Corp. He joined New Departure in 1951, and prior to his present appointment had served as production control planner, supervisor, general supervisor, and superintendent of various manufacturing operations. Jack Pinkney has been appointed special agent in Western Connecticut for the Security-Connecticut Insurance Companies. Jack began his insurance career with the Phoenix of London group in 1948. After completion of their home office training program in fire, inland marine, and casualty insurance in 1949, he was appointed special agent for Connecticut. William W. Smith has been named manager of service-entrance equipment sales for General Electric. In his new assignment Bill is responsible for the sale of G.E.'s lines of residential molded-circuit breakers, electrical load center panels, and light-duty safety switches for use in homes, offices, stores, and farm buildings.

Tom Wueth has been named executive director of the Ansonia (Conn.) Redevelopment Agency. Tom's experience includes work with the American Council to Improve Our Neighborhoods (ACTION) and work with Technical Planning Associates of New Haven where he specialized in the development of urban renewal programs and plans for several Connecticut communities that were severely damaged by the 1955 floods.

The Institute's efficient clipping service keeps us posted on many Class members living and working east of the Mississippi and north of the Mason-Dixon line, but those of you living in the rest of the country and Texas will have to speak

louder. Drop us a line. Meanwhile, best wishes for an enjoyable summer.—O. SUMMERS HAGERMAN, JR., *Secretary*, 8519 Pringle Drive, Cincinnati 31, Ohio.

1951

It's not a new tune, but much is still being written in newspapers and elsewhere about the expanding electronics industries of New England and the resultant stimulating effect on the economy of the region. Some say the Institute is one reason for the growth of electronics industries in the area since it is such an excellent source of advice and personnel. Two recent feature stories in Boston newspapers not only give examples of M.I.T. graduates successful in electronics, but they report on some of our own classmates. One of the stories describes the unusual success of the Transiron Electronic Corporation, which is headed by David Bakalar. David started his company in 1952 with six employees. Over 1,700 are now employed in two plants, and as business booms along this may be doubled in a year or so. Windsor Hunter has been serving as production engineer with the same company. Another such story describes the success of Ewen Knight Corporation and its specialty of building radio telescopes for use in astronomy. Hays Penfield is senior engineer for the company, and he is now assembling equipment for use in tracking the earth satellite.

Promotions and appointments: Fred McCauley has been appointed by Hercules Powder as pentaerythritol area supervisor in the Louisiana, Mo., plant. Fred had been in the Mansfield, Mass., plant since 1955. On this move Fred takes along his three daughters. Robert Lucas has been named executive vice-president of the Pittsburgh Steamship Division of U.S. Steel. Since 1953 he has served as assistant to the president of that division. He has been with U.S. Steel since 1940 with time off for his S.M. in Course XV with our Class. Northeastern University announced the appointment of Richard Packard as assistant professor of chemical engineering. Richard is finishing his doctorate studies at New York University. Bell Laboratories awarded 20 college fellowships for graduate study, and one recipient was Jim McKenna. Jim's award enables him to continue studies at Princeton. The Navy has promoted John Baylis to the rank of lieutenant commander. John is presently assistant design superintendent in the planning department of the Portsmouth Naval Shipyard. Homer Adrianse, another lieutenant commander, has been made contracts and materials officer in the Supervisor of Shipbuilding Office in Groton, Conn. He had been in the Submarine Supply Office in Philadelphia.

Correspondence from classmates that keeps us up to date: Marc Aelion writes from São Paulo, Brazil, that he hoped to make last year's reunion, but he had his plans changed at the last minute and sent Iris, his wife, to the States instead. Marc has been chief engineer with Labor-terapica since October of 1956 and is responsible for starting a new plant for them. Alfred Wheeler sends his résumé: In October, 1951, the draft put him in

the Quartermaster Corps for two years. After the Army he spent two years in Nevada working in several mines and earning an S.M. from the University of Nevada in mining engineering. Since January, 1956, he has been in Texas with the Lone Star Steel Company as a mining engineer in their open pit iron mines in Northeast Texas. His marital status is still single. Dick Strauss tells us he joined Arthur D. Little in 1955 after his U.S. Air Force duty. He is in the Process Development Group. In September of 1956 Dick was married to Virginia Liveright, formerly of Baltimore. Roland Beers is now research director of the Robert W. Johnson Laboratory of Children's Hospital School in Baltimore. Jay Gilmore is supervisor of a Planning and Scheduling Unit of Chrysler Corporation working on a missile project. Jay tells us Hal Siegel is the proud papa of twin dandies named Brandy and Sandy. Robert Walter is now plant engineer for U.S. Reduction Company in Ohio. He moved there in August 1955 from Ethicon, Inc., of New Brunswick, N.J. Murray Sirkis, as he puts it, "kicks in" some news. He completed his Ph.D. in physics at the University of Illinois last October and is now a research assistant professor there in the Electrical Engineering Department. He has two daughters, ages four and two. Murray tells us Allen Odian and Russell Casella are in the Illinois Physics Department, and that John Fox is now at Brookhaven after receiving his Ph.D. in physics. Charles Terrell has been with the Perini Corporation for five years now and worked for them on a pier job in Newport, R.I., this past year. He saw Harlan Haller recently and reports he is with Philpotts Shipping Agency as marine superintendent. Harlan lives in New York and has two daughters.

Marriages: Bob Nickerson was wed in Boston last November to Nancy Whittemore. The couple are now living in Needham Heights, Mass. In April of this year Thomas Meloy was married to Gisela Munzinger in Germany. They are residing now in Cincinnati where Thomas is a technical analyst in the aircraft gas turbine division of General Electric. Elbert Gilbreath took marriage vows in May and is now living on Lookout Mountain in Tennessee. Thaddeus Gorczyca was joined in marriage recently with Anita Ward of Boston; he is a lieutenant in the U.S. Air Force.

News of stork races: Ed Huckle and Dick Willard were recently friendly competitors in a small race to the attainment of fatherhood status. Ed's wife, Ruth, presented him with Robert Stanton Huckle on April 11 in Ann Arbor, Mich. Dick's wife, Gail, delivered Lorraine Walck Willard on April 22. The results of the race pleased all concerned, and now sleepless nights and mounds of diapers have replaced the tensions of the competition.—RICHARD W. WILLARD, *Secretary*, Box 105, Littleton, Mass. ROBERT S. GOOCH, *Assistant Secretary*, Freese and Nichols, 407 Danciger Building, Fort Worth 2, Texas.

1954

Now that the heat of summer is upon us once again, and we prepare to fold

up our typewriters and seek cooler climes until we return in November, it behooves us to pass along those remaining tidbits of news which have accumulated during the past year. Accordingly, let it be known that a lovely picture postcard from the Austrian Alps has arrived, sent this way by our roving president, Dean Jacoby. By the time you read this, Dean will be back on this side of the ocean, but in the meantime he has been scouting Heidelberg, Vienna, and other exotic locales. One of these days he's going to have to start working for a living, and will that be rough! We also received a communique from Matt Baczewski. He is retiring from the Air Force this month, heading for Torrance, Calif., and the Shell Chemical Corporation there. In the fall, he will enroll in Wharton Graduate School and pursue his master's degree. While with Uncle Sam, Matt worked his way up to the position of squadron commander at Warren Air Base in Wyoming. Matt says that Dick Lane is planning to enter Harvard Law School in September, and that George Dormer is working in a bank in London before he returns to Harvard Business School in the fall.

We have received notices of several more or less recent weddings. Fred West married Patricia Sage in Belmont, Mass., last February 22. The Wests are living in Andover, Mass., where Fred is one of the guiding lights in the Research and Advanced Development Division of Avco Manufacturing Corporation. George White and Carol Humphrey were married in Montclair, N.J., on April 6. Along similar lines, Rog Griffin and Elaine Knesel of Cleveland announced their engagement in May. Rog and Elaine plan to be married in October. Rog is now more or less actively employed by General Electric in Lynn, Mass. (Rog claims he's working hard, but we all know Rog.) Anyway, congratulations and best wishes to all the above.

Alex Dreyfoos, his wife, Joan, and daughter, Cathy, are camped in Cambridge, Mass., where Alex is struggling along at Harvard Business School. John Avery is engrossed in the fine points of physics at the University of Chicago. Bill Ferrini is studying at the University of Rome. Will Fiske is drawing his pay check from the American Car and Foundry Industrial Company in Bellingham, Mass. Al Ward is finishing his six-month stint in the Army at Fort Knox, Ky. John Goncz and Russ Chihoski have forsaken the military life, John returning to Jamaica Plain, Mass., and Russ to Baltimore, Md. Their plans for the future are currently unknown. Frank Leeds, on the other hand, has donned a sailor suit and an ensign's insignia, and moved to Washington, D.C. "Doc" Edlin is exploring Colombia, South America, apparently for pay. Ian Williams has left the Persian Gulf area, and is now at the Bank of New South Wales in London. And Bob Shaw is toiling diligently for the Rohm and Haas Company in Philadelphia.

And that brings us to the end of another year. We'll be back in November, but in order to distribute the word, we have to have the word. So, drop us a line this summer and let us know what you're doing, who you married, the name of your dog,

and similar information of general interest. It will be greatly appreciated by your secretary and the rest of the Class. — EDWIN G. EIGEL, JR., *Secretary*, 3654 Flora Place, St. Louis 10, Mo.

1955

It is really just as well that our three-month vacation from reporting has arrived, for we are plumb exhausted from trying to get news out of you all. Nothing like complaining constantly, but we have yet to hit upon the secret of Pulitzer-type unearthing of news. Next year Denny will be sitting on some iceberg near Greenland; so the frail member of this duo will be forced to bear the burden alone (and you will get nothing but reports on how things look from an iceberg near Greenland if you don't write — so there!).

The place to be these days seems to be Fort McClellan. In addition to a flock of '56ers and '54ers, we have our share. They had an "M.I.T. Club of Fort McClellan" meeting back in April with some 15 "members" present. Dave Wilbourn is still there in the Field Requirements Agency of the Chemical Corps School; Les Lee and Lloyd Gilson were at that point about halfway through the Chemical Officers' Basic Course; "Zeke" Dadi-kian was about to depart, having served six months. Bernie Sadoff was scheduled to part company with the Army and Fort Belvoir, after six months, early in April. Since Sandra was awaiting his return to Chicago, we assume he is now back at work with Stewart Warner there.

Richard Varney has been promoted to first lieutenant in the 74th Engineers in Korea. He has been with the Army two years now, so maybe he will be back soon. Dave, Toby, and Jakey Brooks were en route to Fort Belvoir when last heard from (or rather, of). They visited the Nasitirs in Detroit and Ellen Dirba in Denver on their way from Colorado. The Nasitirs plan to do a little gallivanting around New England after school is out before heading westward again. Gary and Felice Brooks are both operating and patronizing the schools in Rochester. Felice is teaching elementary school, and Gary is working for his M.S. in chemical engineering at the University of Rochester in the evenings while devoting his daylight hours to Eastman Kodak. Ed and Alice Pulsifer and Roger and Judy Prager are recent additions to the population of California, the former two residing in the vicinity of Los Angeles, the latter two in San Diego.

From jolly old England Chan Stevens reports that he is still operating a talkathon for Rotary, but relief is in sight. His brother arrives in June, and the two plan to see and do as much as they can before returning to the States in August. Chan is planning a rendezvous with Army Ordnance starting in November for six months. Bob Greene has entered the ranks of "firsts" of our Class members as far as we can tell. He was appointed chaplain of the Army Reserve Unit of Marion, Ohio, so we now have a minister in our midst. Speaking of ministers brings to mind our few items of wedding news: George Harper and Jane Ritchie of Springfield and Wellesley College were married in Boston in March. After honey-

moonings in Acapulco, Mexico, they returned to Boston, where George is working. Shelly Moll and Gloria Bruno, of Larchmont, N.Y., were married on June 1. After a honeymoon in Bermuda, they are now living in Boston while Shelly completes his doctoral program in metallurgy.

We just got a flash of another "first" for '55. Tom Stockham has just been appointed a full instructor in the Electrical Engineering Department at M.I.T. This, I believe, just about sets a record in Course VI for time taken between graduation and appointment. Talking about instructors, Sandy Goldman will be just that at Columbia in September after spending the summer at North American on the West Coast. This will make two '55ers in that category at Columbia; Sandy in electrical engineering and your female correspondent in chemical engineering.

Tidbits: Mike Horstein has taken a break from Sc.D. studies to take a six-month hitch with the Army. Henry Weber has received a Fulbright to the University of Milan. John Wing, Pete Toohy, and Joe Saliba are graduating from Harvard Business School. Joe is going right into the Army for his six-month tour of duty.

Now that your male correspondent has the copy all to himself, he can defend his position from top of the iceberg. Actually, when I came into the U.S. Air Force, I was assigned to the Cambridge Research Center to be trained for reassignment to Thule (Greenland) Air Force Base, as a project scientist for the International Geophysical Year. I shall be there for a year beginning this July, and would love to receive words of pity from any who may care to write. — DELL LANIER, *Secretary*, 54 West 71st Street, New York 23, N.Y. 2nd Lt. LABAN D. SHAPIRO, APO 23, New York, N.Y.

1956

Education is ever more prominent in the public eye. Two recent articles of special note have reached me. One in the *New York Times* has surveyed a group of colleges for number of applicants compared to acceptances. The article expresses the idea that even high quality applicants are not assured of acceptance in the future. The schools surveyed are primarily eastern and not a complete cross-section. Tech, of course, ranks in a respectable position.

The second article has tried to pin down a much more difficult set of statistics. The *Chicago Tribune* has surveyed colleges across the country to rate the best schools in their field. The basis of the rating is the eminence of the faculty only. The schools were rated for being the top university, coeducational college, men's college, women's college, engineering school, law school, and medical school. Undoubtedly to the utter horror of Cambridge citizenry, Harvard and Tech scored a clean sweep in their fields. Only Radcliffe was ranked second. It was noted, however, that in the field of pure science Cal Tech edged the Institute.

Assuming our smug attitude we can here say that this is no news and will only add to the annual volume of mail to the Admissions Office. Perhaps more consideration will be given to the recent sugges-

tion that Harvard and Tech join to build an ideal city of learning over the archaic rubble of Cambridge. Has anyone figured a way to make the brilliant young freshman more mature to meet the increasing responsibility of being exposed to the best?

From the military the flow of names is unceasing. Congratulations to the Navy for having the most complete press releases. If any of you ensigns want a handsome 'copy of your Officers' Candidate School picture for that one and only, I will, courtesy U.S. Navy, oblige. Recent graduates include David Eaves, Raymond Goetz, William Oakes, and Henry Valcour, Jr. Kreon Cyros and Frederick Worsh have completed training at Fort Belvoir. Russell Schweickart, now at Webb Air Force Base, graduated first in his class from primary pilot training.

Haig Parechian married Jean Barton of Warner, Okla., in June. Henry Valcour wed Margaret Patricia Condon of Lowell in April. James Hamblet wed Ann Woodley of Wellesley in April. John Schoeller became engaged to Patricia Hayes of Rockville Center, L.I., N.Y., in May. Hans Sitarz became engaged to Erin Joanne Dover of Atlanta, Ga., in May.

The honor of the first birth announcement in this column goes to David Wayne Bahnman, seven pounds six ounces, born 1:30 P.M., May 8, 1957, in Fort Worth, Texas. This information was rushed to me by special message just in time for this article.

Irving Silver has been awarded a metallurgy fellowship at Cambridge University in England. Northrup Aircraft has notified The Review that Jimmie Chin and Robert Meyer have established residence with said company.

On the lighter side, several members of our Class have been tipping the light bottles. Herb Katz starred in guest appearance in the April issue of the 1954 notes by crashing a reunion party of the Upper East Hayden Physics Society. An ordered-to-duty party was held for Robert Alter in Cambridge and was attended by Paul Abrahams, Robert Brown, John Coleman, Karl Pearson, Gary Quinn, Jesse Rothstein, Ric Schonblum, and Stu Uram, etc.

For those of you who might consider Montreal as a future residence, Phil Bryden has promised a candid report for November. We hope this will be the first of a series for the benefit of the unsettled. Comments on companies will not be printed. One classmate, whose name appeared several times in this column, writes me to discover if I am priming him for the job. Trusting soul?! Fear not friend, that honor will be saved for enemies and those who are trying to dodge me. Phil Bryden casually mentioned that his school term ended April 18. I guess that eliminates spring fever.

Rest your tired eyes until November, lads. — BRUCE B. BREDEHOFT, *Secretary*, 1528 Dial Court, Springfield, Ill. M. PHILIP BRYDEN, *Assistant Secretary*, 3512 Shutter Street, Montreal, Quebec, Canada.

1956G

Receiving news from the graduates of our Alumni Class is an adventure into the great American scene, for our classmates are scattered far and wide. Phil Brooks from electrical engineering is settled in glamorous Los Angeles. Professionally, he has become established with the Ramo-Wooldridge Corporation; domestically with the former Miss Martha Ellis of Waban, Mass. From Ft. Worth, Texas, word has been sent by Frank Lane. Frank was in aeronautical engineering and presently does his research for Convair. R. B. Nippe has gone to Springfield, Mass., with his wife and son to take a position with Monsanto Chemical Company. His present area of employment is Plastics Production. Seattle, Wash., is the current location of Henry K. Hebel. This M.I.T. aeronautical engineer works in the structures group of Boeing Aircraft Company.

At the present date, Z. A. Melzav is out at the University of Michigan on an Office of Naval Research post-doctoral grant in mathematics. At the Stanford Graduate School of Business Administration is Frank W. Bradley, merging his nuclear engineering background with the courses there. Many graduates have chosen to stay close to the hallowed halls. One is John Zotos, a metallurgy graduate

who reports each workday to a lengthy, responsible sounding title as chief of the Static Casting Section of the Rodman Laboratory at the Watertown Arsenal. In Camden, N.J., is a former Sloan Management Fellow. He is James Walsh. Jim has assumed the responsibilities of a wife, three sons, and a career with the Radio Corporation of America. G. W. Patterson has become associated with the Datamatic Corporation in Newton Highlands as a sales engineer. His current address is 90 Sumner Street, Newton Centre, Mass. David Norton was nearby, following graduation in civil engineering, with Associated Engineers in Waltham but shortly reported to Fort Belvoir (Va.) Army Base.

For those of us who are reaping the benefits of graduate training at the Institute, the M.I.T. Alumni Fund is our method of indicating our appreciation. There will be more news about the 1956 Graduate Class next fall. — CHARLES T. FREEDMAN, ENSIGN, U.S. NAVY, *Secretary*, BOQ 2003, Sandia Base, Albuquerque, N.M.

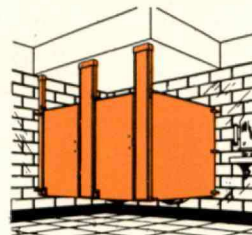
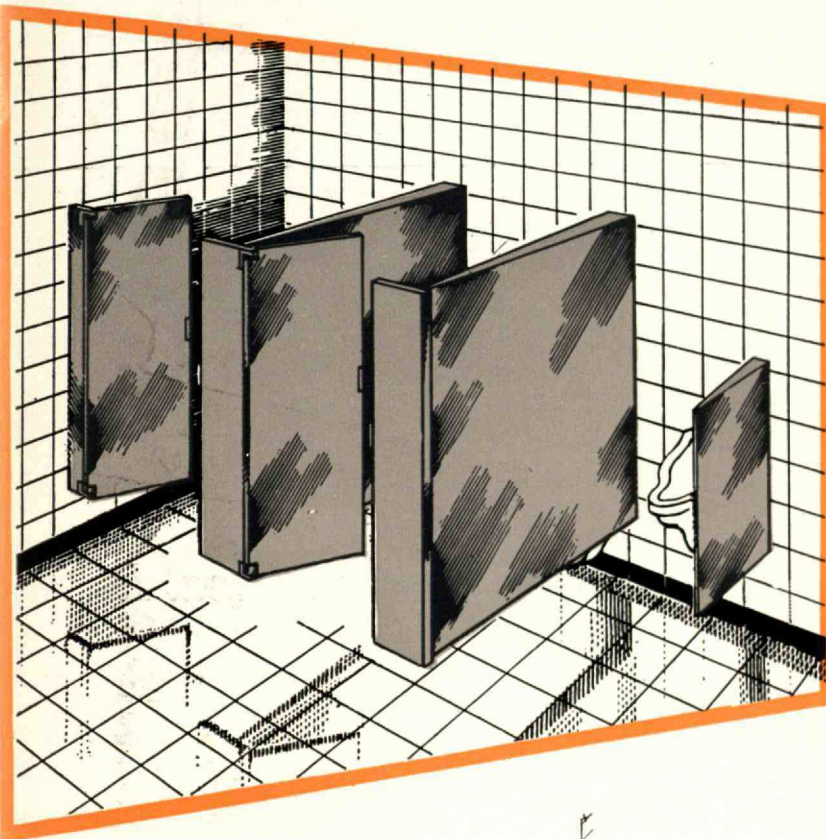
1957

Greetings! This is just a brief note after the excitement of Senior Week and graduation to let all of you know that the Class of 1957 has just opened up shop in the Class Notes section of this publication. We'll be all set next fall to report to you what your fellow classmates are doing, where they are studying, whom they have married, and whose Uncle they are dodging. All we'll need is for you to drop us a line occasionally and let us know what you are doing. A further service of our shop is to keep a record of your current address. When you want your friends address, we will probably have it here.

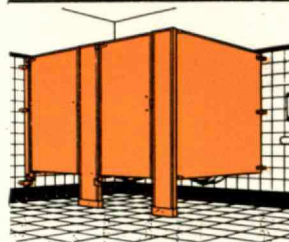
If you are planning to be in New York this summer, or just passing through, give us a ring. Current indications are that there will be quite a nucleus of Tech men in the big city these next few months. Hank Salzhauer and Jim Rowan join me in wishing you the best of summers! We'll be right here again next November with the first news of our Class. — ALAN M. MAY, *Secretary*, 55 East End Avenue, New York 28, N.Y., REgent 4-2688.

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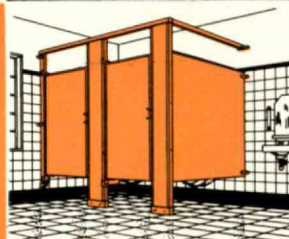
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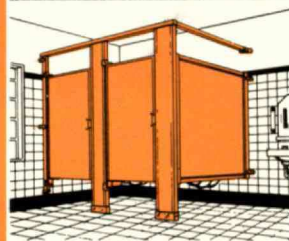
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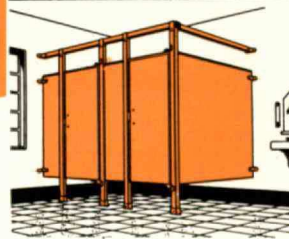
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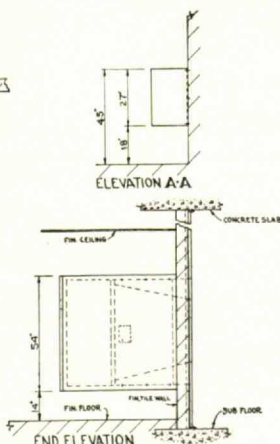
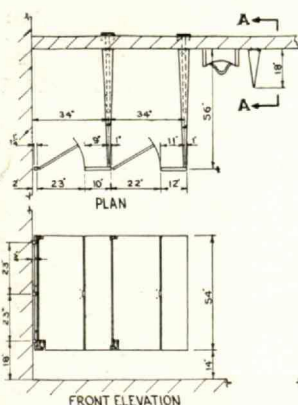
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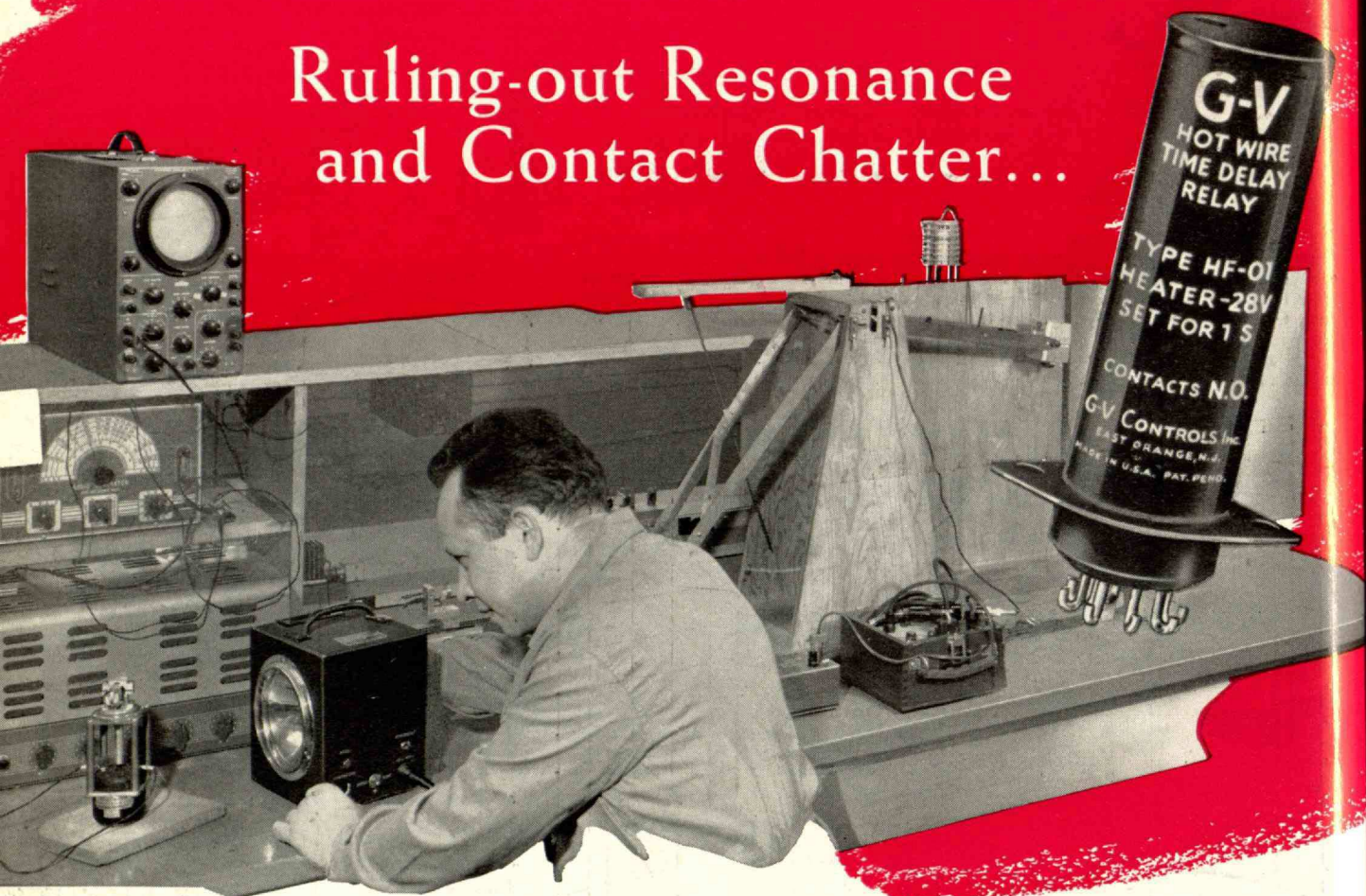


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